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Indian Railway Enquiries

DURING the present century enquiries by commissions or committees, or individual experts, into matters affecting Indian railways have been numerous. The late Mr. Thomas Robertson, of the Great Northern Railway (Ireland) published a report in 1903 on administration and recommended the creation of the Railway Board. A departmental committee under the chairmanship of Sir James Mackay (the late Lord Inchcape) put forward in 1908 an improved programme of railway construction and equipment. The majority report of the Acworth Committee of 1920-21 recommended State operation on the expiry of the contracts of the different companies, and both majority and minority reports were in favour of separating the railway budget from the general budget. Drastic financial changes were proposed by the Inchcape Retrenchment Committee in 1923. Amongst more recent enquiries were those of the Whitley Commission on Labour appointed in 1929, and the Pope Economy Committee, of which the first report was published in March, 1933, and the second in June, 1934. The Indian Government has now appointed as a railway inquiry committee Sir Ralph Wedgwood and Mr. W. A. Stanier, who will be assisted by Mr. A. Forbes Smith, L.N.E.R., and on page 652 we set out the terms of reference. In appointing this committee the Government has in mind the present critical situation of the railways, and feels that without additional net revenue from the railways it will be unable to finance the provincial reforms contemplated by the Government of India Act, 1935.

Road Service "A" Licences

Mr. Gleeson Robinson, Traffic Commissioner for the Metropolitan Area and Licensing Authority for the London Traffic Area, gave on Monday, October 19, his reserved decision on the application by Bouts-Tillotson Transport Limited for the renewal of "A" licences granted to that company in 1934 under the Road and Rail Traffic Act, 1933. The applicants had asked for licences in respect of 139 motor vehicles and 56 trailers, and the Commissioner granted licences for 128 motor vehicles and 42 trailers. Opposition was offered by the four main-line railway companies on certain grounds of principle to the licences for long-distance trunk services from and to London. They contended that the facilities available for the carriage of goods by rail were suitable for carrying, with certain exceptions, the goods proposed to be carried by the applicants on long-distance trunk services, that the capacity of the railways was not fully utilised, and that the granting of the proposed licences would disturb the railway rate structure sanctioned by Parliament in the interests of industry as a whole. The Commissioner expressly disclaimed any jurisdiction in regard to rates of charge for road transport, and was satisfied that the prudent course to adopt on the present application was to apply the principle of maintaining the *status quo*. The decision is reported more fully in our Railways and Road Transport Section. We understand that an appeal against this decision is being lodged by the railway companies.

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The Week's Traffics

The traffic return of the L.M.S.R. for the past week brings the aggregate increase for this company to a figure above the £2,000,000. Total earnings of the four main line companies for the past week show a combined advance of £125,000, as against one of £127,000 for the previous week. Passenger train receipts again supply the greater part (£71,000) of the increase, merchandise is only £20,500 net up, and coal is £33,500 up. There were good coal traffic increases for the corresponding week in 1935. For the 42 weeks of the current year the four companies together show an advance of £4,131,000, or 3·37 per cent. Passenger train receipts to date give the following percentage increases:—L.M.S.R. 2·34, L.N.E.R. 2·03, Great Western 1·63, and Southern 1·73.

	42nd Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 30,000	+ 22,000	+ 11,000	+ 63,000	+ 2,049,000	+ 4·16
L.N.E.R. ..	+ 11,000	+ 5,000	+ 13,000	+ 29,000	+ 1,218,000	+ 3·40
G.W.R. ..	+ 15,000	—	+ 9,000	+ 24,000	+ 551,000	+ 2·67
S.R.	+ 15,000	− 6,500	+ 500	+ 9,000	+ 313,000	+ 1·87

London Transport records an advance of £257,200 for the 16 weeks of the present financial year.

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Argentine Railway Distributions

The announcement on Thursday last week of a dividend of 3½ per cent. on the 4½ per cent. preference stock of the Central Argentine Railway came as a pleasant surprise in view of the decrease of about £250,000 shown in the traffic returns for the financial year which ended on June 30 last. On the other hand the large sum of £673,747 was brought forward from the previous year. To pay this dividend will require £339,350. No dividend was paid on this stock for the financial years 1933-34 or 1934-35, but in October last year the balance of the dividend declared in November, 1933, was distributed. This stock is in the curious position of being non-cumulative and yet ranking for dividends before the £5,000,000, of 6 per cent. cumulative convertible preference stock which was issued at par in 1926-27 and has received no dividend since July, 1932. Another encouraging feature in Argentine railway finance

is that the Buenos Ayres & Pacific has made a beginning of clearing the interest arrears on the £10,942,673 of 4½ per cent. consolidated debenture stock, which had been outstanding since December, 1931, by a payment of one half-year's interest to June 30, 1932. Holders of Argentine Great Western Railway 5 per cent. redeemable debenture stock, on which nothing had been paid since March, 1932, are at the same time to receive 2½ per cent. in respect of the six months to October, 1932.

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Overseas Railway Traffics

A further slowing down in the rate of decrease in traffics of the Buenos Ayres Great Southern Railway has been observable during the last fortnight, when the company recorded a fall of only £5,079, as against £22,462 in the previous two weeks. The Central Argentine has improved its traffic position by £64,970, the Buenos Ayres Western by £14,843, and the Buenos Ayres & Pacific by £3,477 during the same period. Amongst Brazilian railways the Leopoldina shows a traffic gain of £63,954 for the 42 weeks of the present year, and the San Paulo one of £216,278 for the 41 weeks.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	16th	79,291	+ 1,914	1,178,869	+ 14,432
Buenos Ayres Great Southern ..	16th	112,245	— 4,510	1,729,372	— 174,760
Buenos Ayres Western	16th	40,706	+ 10,271	622,466	— 4,183
Central Argentine	16th	138,841	+ 30,530	2,181,972	+ 291,317
Canadian Pacific	41st	640,100	— 39,000	21,267,000	+1,516,400
Bombay, Baroda & Central India	28th	204,750	— 29,325	4,253,400	+ 208,275

On the Canadian Pacific there has been something of a setback during the past two weeks, which has reduced its aggregate traffic increase by £64,400.

* * * *

"The Railway Situation in Great Britain"

Under this title Sir Josiah Stamp contributed an article to the "Railroads and Government" number of *The Annals*, which we notice in our Publications Received columns this week. Describing the British railway situation as promising, rather than adverse or satisfactory, Sir Josiah said that a position had now been reached, from which, barring any untoward circumstances, the railways might reasonably expect a steady progression towards the pre-depression level. While the attainment of that objective would, of course, be a satisfactory achievement, he emphasised that it could by no means be interpreted as a return to normality. The year 1929, for instance, was the last "peak" railway year before the period of depression, but even in that year the aggregate net revenue or profit (before remuneration of debenture capital) of the four group railways was 11 per cent. below the "standard" revenue (based on 1913) which Parliament considered that the railways were entitled to earn. Although the net revenue of 1935 was 35 per cent. below "standard," Sir Josiah said it was satisfactory to record that 1935 was the third successive year in which all of the four group railways showed an improvement in net revenue. "There is every indication at the time of writing," he added, "that the line of progression will not dip down in 1936."

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Camping Coaches for the Coronation

To relieve the pressure on hotel and boarding house accommodation in London during Coronation week, the L.N.E.R. has arranged to place camping coaches on suitable sites in the suburban districts. These coaches will each accommodate six people and will be let at a rental of £10 for the Coronation week to visitors to London from the Eastern Counties, Midlands, North of England, and Scotland. Each coach is fully equipped with cutlery, kitchen utensils, crockery, bed and table linen, blankets, lamps, stoves, chairs and everything likely to be required, even down to ash trays and a soap dish. The £10 rental will also include a free ticket from the suburban station to the London terminus every day of the week for all six members of the party, so that the only additional expense will be the cost of food. Sites for the camping coaches have been carefully selected with a view to safety, accessibility, water supply, and local train services to and from London, and suitable sites for 52 coaches have been found at the following places: High Barnet (5 coaches); Totteridge and Whetstone (2); Woodside Park (5); Wembley Hill (3); Sudbury Hill (2); Alexandra Palace (4); Loughton (6); Chigwell Lane (4); Theydon Bois (3); Epping (4); Fairlop (5); Grange Hill (3); Harold Wood (6). In addition, sites are being examined at Wood Street, Walthamstow, for five coaches and at West Green for two. The only condition attached to the letting is that the occupants should travel to London by rail.

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Illuminating Engineers Meet New President

For 27 years now the Illuminating Engineering Society has been endeavouring to make us all "light-conscious," but if anyone has a suspicion that its sole aim is to promote the sale of more light, to the ultimate benefit of its members, let him note that this year the society has elected for its President the able champion of one of Britain's largest consumers of lighting, and necessarily an exponent of economy, namely Mr. Arthur Cunnington, B.Sc., M.I.E.E., Lighting and Heating Assistant to the Chief Engineer of the Southern Railway. It was to be expected that a society with such eminent men as A. P. Trotter and Silvanus Thompson for its first members would endeavour to gain for its transactions a reputation for impartiality and scientific veracity, and, temptations notwithstanding, this objective has been won. The society has escaped the fate of so many specialist societies, which is to become the tool of a particular trade or industry, and today its not unimpressive proceedings are worthy to stand alongside the weighty and impeccable tomes issued by the older bodies. In this issue there appears a summary of a paper which, while yet again the work of Mr. Cunnington, is nothing less than a presidential address. We hope that, culminating effort as such an address must be for any man, it will not be Mr. Cunnington's last.

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Swiss Branch Lines Upheld

In our Overseas columns on page 656 will be found a summary of a remarkable report upon the closing of branch lines in Switzerland. After long and careful study of the relevant conditions, the two experts charged with the framing of the report were forced to the conclusion that, with one exception, road services in lieu of rail on all the routes examined would be more expensive to work than the existing trains, and would also involve considerable capital outlay. For all ordinary services, moreover, rail services had the advantage of higher average speed and capacity, whereas road transport would have to be freed from the existing railway handicap of having to accept traffic of all kinds however unremunerative and inconvenient. Dealing with the question of substituting railcars and trailers for trains, the report makes it clear that where mails, parcels, milk and livestock have to be carried, and where there is considerable seasonal fluctuation of traffic, the substitution of railcars would be uneconomical, and their use should be confined to branches requiring only a light passenger service. Lest it be thought

that these experts might have been biased unduly in favour of the retention of railways, and of train operation, it should be noted that one is President of what presumably corresponds to our Society of Motor Manufacturers and Traders, and the other is the Manager of the great diesel and railcar firm of Saurer.

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Smoke Abatement

Railway visitors to the Smoke Abatement Exhibition, which is open at the Science Museum, South Kensington, until the end of this month, will find that their consciences are not seriously troubled by the exhibits themselves. The only instance of railways being shown specifically as smoke producers is an artist's sketch, in which the emission from the chimney of the locomotive has probably been inspired by the requirements of propaganda. Even this reproach is mitigated by the fact that the drawing is displayed alongside a photograph of a Southern Railway electric train, in order to emphasise the cleanliness of electric traction. Otherwise, railway equipment and premises do not figure by name among examples of the depredations of industrial and domestic consumers. What is of particular interest at the present time, however, is a sample of foreign matter extracted from the atmosphere by air-conditioning, a quantity of which has been compressed into a hard, solid cube about the size of a brick. But if the railways escape at South Kensington, it must be recorded that the National Smoke Abatement Society, which is responsible for the exhibition, held a conference last week at which a resolution was passed in favour of approaching the companies with regard to abatement of smoke emission at stations in several large towns.

* * * *

Ferro-Concrete Bridges

Unlike railways in many other parts of the world, the British systems have—with the notable exception of the Northern Counties Section of the L.M.S.R. in its Greenisland loop viaducts in Ulster—not so far launched forth to any great extent into ferro-concrete construction for underbridges, though road overbridges of this type are now becoming rather more common. A recent outstanding instance of this form of construction is the new concrete balanced-arch bridge at West Worthing described and illustrated in our issue of June 26, and another recent example is the pre-cast G.W.R. overbridge illustrated and described in our issue of March 20 last. On the Continent and in North and South America, however, the reinforced concrete underbridge is becoming more and more generally used. On page 669 of this issue we illustrate some specimens of a remarkable series of such bridges and viaducts recently built in Brazil, the spans ranging up to 197 ft. in length. This series which carries the new Jaguary—São Borja extension of the Rio Grande do Sul Railway over a large number of rivers and valleys, consists mainly of the arch type of span, varieties of which are seen in the first and third illustrations, in fact these are of frequent occurrence. The concrete trestle viaduct with a single arch span is, however, more uncommon and is a striking structure 93 ft. high, built entirely of indigenous materials.

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The Southern Pacific Prefers Steam

Whereas the Union Pacific Railroad of America is specialising in diesel-electric propulsion for its high speed trains between Chicago and the Pacific Coast, certain of which use Southern Pacific metals in order to reach Los Angeles and San Francisco, the latter railway has decided on steam for its projected fast coastline service between the two cities last mentioned. Orders have already been placed for two twelve-car streamlined trains, each of which will accommodate 465 pasengers in luxurious conditions, comprising chair cars, a parlour car, an observation car, a dining car, and a " tavern " car—a vehicle of novel design, with lunch counter facilities at one end and lounge space, equipped for the service of drinks and refreshments, at the other. For the haulage of the new express, which will be named The Daylight, streamlined steam locomotives are to be built, and in view of the extensive experience of the Southern Pacific with oil-firing, and the indigenous supplies of Californian oil, it may be taken for granted that oil will be used for steam-raising purposes. The present intention is to run The Daylight in each direction daily, starting from both Los Angeles and San Francisco at 8 a.m., and reaching the destination not later than 6 p.m., which would cut at least one hour from the present fastest schedule over the route.

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Increased Use of Crossing Barriers

The continuance of accidents caused by disregard of level crossing warnings by road vehicle drivers is causing considerable anxiety to American railway and highway authorities. A proportion is caused by drivers who, having obeyed the warning signal and waited for a train to pass, start across the line without thinking, and are caught by another train coming in the opposite direction. To meet the danger, special forms of warning signal have been used, reminding the public of the second train, or pointing out that two or more tracks exist. Lifting barriers worked automatically, to bar the way until it is safe to cross, are apparently being looked on as a necessity in many cases. Our contemporary *Railway Signaling* publishes details of several designs in which three-position semaphore signal motors have been satisfactorily adapted to the operation of such barriers. Some thought has been necessary to construct a light, yet strong and well balanced, design, but good results are reported and it appears to us likely that the idea will become increasingly popular in America. The light signal has been displacing the motor semaphore, but the latter seems coming into its own again in a new and useful form.

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Intensive Locomotive Repairs

There are times in the experience of every railway company when the need for more locomotives to deal with periods of intensive traffic is felt. This does not necessarily mean that the locomotive stock as a whole is too small, but that too large a proportion of the engines is under repair at one time. As a general rule what might be termed a period of crisis is not likely to arise except, perhaps, in the event of national emergency, but there are, as intimated, periods when more locomotives available on the road would be welcome. This situation would appear to have arisen recently on the Baltimore & Ohio Railroad. A statement we have received from the company's headquarters is to the effect that a locomotive repair scheme on a large scale is just being started at four of its principal shop centres. The reconditioning and repair of 100 freight locomotives are included in the programme, the execution of which will mean that a total of 725 shopmen will be recalled and put to work in four separate Baltimore & Ohio workshops. The steady increase in freight traffic during the past several months on the railway compared with a year ago has made it necessary that this repair programme should be undertaken so that replacements of locomotives in regular service will be available, another point being that the railway will be better prepared than it is at present to provide engine power for further increases in freight traffic such as are expected in the near future.

Buenos Ayres Great Southern Railway

THE fall in the receipts from fine grains (wheat, maize, oats, barley, linseed, and rye) more than accounts for the decrease of £950,985, or 8·68 per cent. in the gross receipts of this company for the year ended June 30, 1936 in comparison with the previous year. It had also to meet more intense competition from road transport for other traffics, and heavy exchange losses of £1,173,982, which were, however, £378,740 less than in 1934-35. In working expenses there was a saving of £245,019, or 3·24 per cent., but the operating ratio rose from 69·10 per cent. to 73·21 per cent., and the net receipts were lower by £705,967, or 20·85 per cent. After meeting all charges for interest and under working agreements there is a balance available for dividends of £111,304, which enables the directors to recommend a dividend of 1 per cent. (requiring £80,000) on the 5 per cent. preference stock, leaving £31,304 to be carried forward, as against £28,547 brought in.

On this occasion extracts from the report of Mr. C. H. S. Harris, the new Director General, take the place of the communications from the Chairman of the local Board and from the General Manager which appeared in previous years. Receipts from passenger traffic showed a decrease of approximately 5½ per cent., the heaviest falls being recorded in suburban bookings on the Buenos Aires local section, chiefly owing to the increased road competition resulting from the permission given by the municipal authorities to micro-omnibuses from the Southern suburbs to enter the Federal Capital. The traffic between Buenos Aires and La Plata was the most severely affected, and fares between these points were reduced in December last, with the result that a substantial proportion of the traffic lost has already been recovered. It has now been decided to reduce the price of ordinary and " recreo " tickets by a substantial percentage to all stations on the suburban section from December 1 next, and it is proposed simultaneously to introduce an improved and accelerated local timetable which is at present awaiting the approval of the Government. Private motorcar traffic to Mar del Plata is expected to show a large increase when the paved road thereto is completed within the next 18 months, and to forestall this and also the competition of the pleasure resorts of the Uruguayan Coast, it is proposed to introduce an improved and accelerated timetable in December. Parcels and excess luggage receipts, on the other hand, showed an improvement of £67,939, or 8·71 per cent. Goods traffic showed a fall of 11·09 per cent. in tonnage and of 15·05 per cent. in receipts. Grain receipts were down by £991,188, or 39·70 per cent. Revenue from livestock, however, increased by £177,708, or 19·24 per cent. Some operating figures are compared below:—

	1935–36	1934–35
Number of passengers	48,726,138	52,888,638
Tons of goods ..	7,102,753	7,988,861
Ton-kilometres ..	1,911,232,121	1,978,632,094
Average haul, km. ..	269·08	247·67
Train-kilometres ..	22,494,858	21,893,561
	£	£
Fares earned ..	2,509,197	2,654,202
Freight earned ..	4,818,447	5,672,185
Gross receipts ..	10,006,699	10,957,684
Working expenses ..	7,326,277	7,571,296
Net receipts ..	2,680,422	3,386,388

Further improvements have been effected in the organisation of the workshops at Remedios de Escalada and a scheme has now been completed for carrying out the general repair of locomotives on a " belt " system which should lead to substantial economies in the near future. During the year under review an additional expenditure of £92,942 on locomotive maintenance was found necessary, but expenditure under this heading should now have reached its peak. An important programme of rolling stock conversions has been approved which should facilitate considerable economies in the cost of train running. This includes the conversion of 12 restaurant cars and three buffet cars to composite buffet cars and first class day saloons. The direct cost in the maintenance of way and works fell from £292,289 to £282,695, thanks to the introduction of fly packing and other improvements resulting from the reorganisation of the gangs, further investigations into working methods and track phenomena, and the instruction of inspectors and foremen at the training centre in the method of working. In order to demonstrate the economy to be obtained from jointless track, the joints of both tracks through Adrogué station involving a length of 250 metres will be welded. The performance of the diesel-electric units after some modification has showed a distinct improvement. Total mileage run increased from 533,330 to 596,011, a gain of 11·8 per cent., with a corresponding increase in running costs of only 0·61 per cent. Further progress has been made towards the complete merger of the administrations of the Southern and Western Railways. The system of accounts has been thoroughly overhauled, and steps have been taken towards the implanting of a complete system of budgetary control. Water-softening plants are in course of installation at several stations on the Buenos Aires—Mar del Plata line, and at certain points on the local section.

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South Indian Railway

AT the close of the financial year ended March 31, 1936, for which we have received the report, the length of line worked by the South Indian Railway Company on behalf of the Government of India was 2,234 miles, of which 599 miles were broad gauge, 1,536 miles metre gauge and 99 miles were narrow gauge. This was an increase of 6 miles during the year caused by the opening on January 20, 1936, of the Agastiyampalli—Point Calimere extension, and by alterations in permanent way consequent on remodelling of Shoranur Junction and re-alignment in the Rameswaram branch. In addition, the company works for other owners the following metre gauge lines:—Pondicheri Railway (Pondicheri Railway Company) 8 miles; Karaikkal Railway (French Government) 15 miles; Travancore Railway (partly owned by the Government of India and partly by the Travancore State) 148 miles; Coimbatore District Board Railway 25 miles; and Tinnevelly District Board Railway 38 miles. It also works on behalf of the Cochin State the broad gauge Shoranur—Cochin Railway of 65 miles. Open line capital outlay during the year, including suspense, amounted to Rs. 14,93,577, of which engineering works absorbed Rs. 7,06,011. The outlay on engineering works includes a credit of Rs. 2,30,000 on account of superseded machinery at Negapatam, Podanur, and Trichinopoly, consequent on the transfer of workshops to Golden Rock. The outlay of Rs. 8,23,604 on rolling stock included the provision of electric headlights to 80 metre gauge engines. Capital expenditure on the Point Calimere extension amounted to Rs. 2,89,499.

Gross earnings for the year under review showed a net decrease of Rs. 25,94,091, or 5·12 per cent., but in working expenses there was a net advance of Rs. 12,13,912, or 4·19 per cent., so that net earnings were lower by Rs. 38,08,003, or 17·54 per cent. The company's share of surplus profits remitted to London amounted to Rs. 13,126, realising £990, as compared with Rs. 2,05,217 and £15,498 for 1934-35. To stockholders the total distribution for the year is 5½ per cent. (2 per cent. from

surplus profits and 3½ per cent. from guaranteed interest) as against a total of 6½ per cent. for 1934-35, and of 8 per cent. for each of the fifteen years before that. The accompanying table compares some operating figures:—

	1935–36	1934–35
Passengers carried	47,186,837	51,568,950
Public goods traffic, tons ..	2,933,501	2,927,860
,, ,, ton-miles	364,864,532	364,631,923
Average haul, miles	124	125
Operating ratio, per cent. ..	62·78	57·17
	Rs.	Rs.
Passenger receipts	1,97,77,990	2,19,38,597
Public goods receipts	2,27,99,735	2,32,11,838
Gross earnings	4,80,97,378	5,06,91,469
Expenses	3,01,95,374	2,89,81,462
Net receipts	1,79,02,004	2,17,10,007

In third class traffic which contributes 99 per cent. of the total number of passengers carried and 92 per cent. of the total earnings from passengers there was a fall of 8·52 per cent. in numbers and of 10·83 per cent. in receipts. First and second class passengers, however, brought in more money, notwithstanding a decrease in numbers. In parcels receipts (Rs. 16,85,227) there was an increase of Rs. 19,223. Earnings from public goods traffic were Rs. 4,12,103 lower, although 5,641 more tons were carried. Most of the principal commodities, except rice, gave lower receipts. On account of renewals and replacements of permanent way, works, and rolling stock the sum of Rs. 39,90,047 was expended during the year under review, as against Rs. 31,97,656 in the previous year. There was an increase of Rs. 3,49,188 under other ordinary working expenses.

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The Gateway of Great Britain

DOVER'S ancient position as the key port of entry to England has resulted in its having been for centuries a vital traffic centre. The coming of railways still further enhanced its importance, for the port became in effect the railhead of the country, and now the establishment of a train-ferry dock and the inauguration last week of a regular through passenger service to and from the Continent has set the seal on Dover as the main Continental gateway of Great Britain. Rail communication between Dover and the Metropolis was established by the South Eastern Railway in 1844, when, on February 7, it opened (from Folkestone) the final section of its original main line to Dover Town station, at first called simply "Dover." This was situated just to the west of the site of the Lord Warden Hotel. In 1861, by agreement between the Admiralty and the railway company, the line was extended to connect with rails laid by the Admiralty on the Admiralty pier, and the Admiralty agreed to permit the railway to run its trains on to the pier lines in connection with the arrival and departure of cross-Channel steamers.

By 1861 the London, Chatham & Dover Railway was rapidly approaching Dover from Canterbury, and on July 22 of that year was opened to a temporary terminus at what is now the Priory station. It was then named Dover Town, but was renamed Priory after the adjacent ruins of St. Martin's Priory, and the designation "Town" adopted by the S.E.R. station. Between the Priory and the shore it was necessary to drive a 685-yard tunnel; this was completed a few months later, and on November 1, 1861, the L.C.D.R. was extended to the Harbour station. Arrangements were made in 1862 to effect a junction with the Admiralty pier line, and, from the opening of this on August 30, 1864, boat trains of both companies used the pier. The pier station consisted of one long narrow platform in the middle of which were two ramps sloping down to quay level to give access to a landing on the west side of the pier; the arrangement has also been described as two platforms placed tandem-wise. Originally, we believe, the landward end was used by S.E.R. trains and the seaward by L.C.D.R. trains, but subsequently this order was reversed. From about 1862 the actual control of the trains on the pier was exercised by the Admiralty, but in 1892 the work was taken over by the Dover Harbour Board, and that position remained until the war.

In the meanwhile, an important local development had been the opening on June 15, 1881, of a direct connection between the S.E.R. Town and the L.C.D.R. Harbour stations. This was a joint line of the two companies, built as part of the Dover-Deal joint railway, and the spur between the two Dover stations completed a triangle with the two approaches to the pier. The next step was the establishment of a new station on reclaimed land in the harbour alongside the Admiralty pier. Many important harbour works were undertaken in the closing years of last century, and the new Marine station was included in the scheme. The first of the new works to be completed was the Prince of Wales's pier, opened in 1902. A station was arranged on it by the Dover Harbour Board, and this was used spasmodically until 1914 for handling liner traffic, but has not since been used for that purpose and most of the platform has now been demolished. The Marine station was approaching completion when war broke out, and from January, 1915, onwards was used for ambulance and other military traffic. Public use (for Continental traffic) began in January, 1920; an ordinary L.C.D.R. train was introduced in the following October; and S.E.R. trains ran into the new station from February, 1922, onwards. Both the Town and the Harbour stations have been closed, and thus Dover traffic is concentrated at the Priory and the Marine stations. Alongside the latter is the new train-ferry dock, which completes the modern rail facilities of the "gateway of Great Britain."

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Should Railway Companies Build Locomotives?

UNDER the above title the Institution of Locomotive Engineers recently held an informal and confidential discussion to which we venture to add a non-confidential contribution which may perhaps be of general interest. The locomotive manufacturing industry was built up like many others on steady export demand. Indeed, after the very early years, these works were so occupied in producing locomotives for overseas that they were able to disregard the home markets. That is, they were in such a position as to be unconcerned by losing orders which might have come from the home railways as a consequence of quoting prices which could not bear comparison with the cost of producing locomotives in the railway companies' own works. This inevitably resulted in the railways extending their own erecting shops until only a small proportion of any new locomotives were built by outside firms. In recent years, however, the export market has been increasingly shared with other countries—notably Germany—and the locomotive manufacturers have turned to the home railways for contracts. What then is to be the attitude of the railways?

The manufacturer points out that his is one of the staple heavy industries of the country, and that it is important for the welfare of the nation that such a great exporting industry should be kept alive. This he says cannot be done without the assistance of the home railways. The home railways, on the other hand, point out that, while the manufacturers have been enjoying the advantage of a large export business, they have spent large capital sums in equipping their own shops. Hence, if the railways

were now to order all their new locomotives from contractors, they would in effect be asking the railway shareholders to subsidise the export industry. Thus, so far as the railways are concerned, the problem is merely one of redundancy; they do not require all the services offered them by the manufacturers. It seems odd, however, that from the national point of view the problem always seems to necessitate that the benefit of one section of the community can be achieved only at the sacrifice of another.

Indian Railways Enquiry

FOLLOWING the criticisms of Sir Otto Niemeyer as to the disquieting position of the Indian railways, and the recommendation of the Public Accounts Committee that there should be an expert examination of the whole position, the Government of India, states the India Office, has appointed the following as a railway enquiry committee:—

Sir Ralph L. Wedgwood, Chief General Manager, London & North Eastern Railway; and

Mr. W. A. Stanier, Chief Mechanical Engineer, London Midland & Scottish Railway.

The committee will be assisted by Mr. A. Forbes Smith, Chief General Manager's Assistant for Rates and Statistics, London & North Eastern Railway.

Mr. L. H. Kirkness, secretary to the Railway Board, and Mr. B. M. Strouts will act as Joint Secretaries.

It is understood that the members of the committee will arrive at Bombay by the ss. *Chitral* on November 19, and will return to England early in March.

The terms of reference are as follow:—

"To examine the position of the Indian State-owned Railways and to suggest such measures as may, otherwise than at the expense of the general Budget,

(1) secure an improvement in net earnings, due regard being paid to the question of establishing such effective co-ordinaiton between road and rail transport as will safeguard the public investment in railways, while providing adequate services by both means of transport; and

(2) at a reasonably early date place railway finances on a sound and remunerative basis."

We commented editorially on Sir Otto Niemeyer's report on pages 1105-6 in our issue of June 12 last. The recommendation of the Public Accounts Committee reads: "We would urge that the Government of India should immediately obtain the services of an acknowledged expert in railway management to conduct an examination of the whole field and recommend steps which will secure definite (*i.e.*, other than mere hopes of increased revenue due to improving trade) improvements in railway finances to the extent of something like three crores a year immediately and ultimately of such magnitude as is required to maintain full solvency on a strict accounting basis. And to avoid misconception we add that the terms of reference should exclude the possibility of securing this end by a mere transfer of liabilities to general revenues."

According to a Press Association statement, Sir Otto Niemeyer, who is a Director of the Bank of International Settlements, Vickers-Armstrongs Limited, &c., and in 1935 was adviser on finance to the Government of India, has commented: "The position of the railways is frankly disquieting. It is not enough to contemplate that in five years' time the railways may merely cease to be in deficit. Such a result would also tend to prejudice or delay the relief which the Provinces are entitled to expect. I believe that both the early establishment of effective co-ordination between the various modes of transport and the thoroughgoing overhaul of railway expenditure in itself are vital elements in the whole of the Provincial problem."

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Boardwalk Flyer

Coll-Earn, Auchterarder
September 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I doubt whether there ever was in the old days a train yclept The Boardwalk Flyer; *vide* your editorial note on page 438. I think you must mean The Atlantic City Flyers. There were two "down" from Camden Town pier opposite to Philadelphia, Pa.: When I began (nigh 40 years ago) to try in the British press to shame our sluggish railways by detailing their daily feats, the home defenders wrote saying, "Oh! Yes, all very easy, down trains on a nice down slope down to the sea in cars," and not in the ships of the Psalmist (Psalm CVII, V. 23). So I got my friend Theodore Voorhees, the First Vice-President of the Philadelphia & Reading, to put on two upwards ones at the same 55½ miles in 50 min. Each year he sent me the returns of their actual running which showed very good punctuality, even with trains up to 420 tons. Two locomotives were never used. He told me that these high speeds at very cheap fares (five shillings for 111 miles) developed such a traffic, on his line alone, that on holidays they would run down over 100 specials before 9 a.m.

When Voorhees ran me to Atlantic City we ferried across 1½ miles (half-a-mile more than the famous Queensferry ferry, established by Margaret, Saint & Queen, about A.D. 1050), walked up from the pier, were photographed three times, boarded a 335-ton train, and then ran 55½ miles to dead in 44 min., all in one hour. We were doing 64¾ m.p.h. before we left the streets of Camden Town. Sir William Acworth and Mr. Dugald Drummond told me they did the 55½ miles in 42 min. start-to-stop. The energy put forth by this small locomotive (only 2,500 sq. ft. of heating surface and 235 lb. of steam pressure—a 4-cyl. compound, Vauclain system) is shown by the fact that we used just an inch or two less than 5,000 gal. of water in 55½ miles My friend Samuel M. Vauclain devised this Atlantic type for these "Flyers," so as to get a huge firebox (10 ft. 6 in. wide) and short coupling rods.

Being on the engine, I had one of the major frights of my life. I thought we were going through Atlantic City station into the sea, but we did the last two miles to dead in 120 sec.—thanks to High Speed Westinghouse. With all respect to our pioneer, the Cheltenham Flyer, I think 55½ miles in 50 min. is harder work than it does—even putting aside the much greater weight of the U.S.A. trains and the downwards trend of the G.W.R. run. In fact I think the P. & R.'s famous daily feat of 11 miles in 10 min. start to stop ranks as the hardest thing ever done, and with very big trains. My motto being, "The shorter the spurt the harder."

The "Boardwalk" is the famous (and hideous) wooden walk on legs which uglifies a lovely white sand shore for 8 miles with cheapjack wee booths—it may be longer now than when I trod it in 1901.

Yours apologetically (if I be wrong),
NORMAN DORAN MACDONALD

P.S.—I am glad to see you eschew that ugly looking and somewhat modern word "flier." N. D. M.

[Train No. 159, 3.08 p.m. from Camden to Atlantic City, is designated "Boardwalk Flyer" in both the public and the working timetables, and has been so for a number of years past. As to "two miles to dead in 120 sec."; on the German run of May 30 with the streamlined 4-6-4 hauling the special for the Institution of Locomotive Engineers party (see our issue of June 12), Mr. Cecil J. Allen recorded that the train came down in "0.87 mile to dead" in precisely 60 sec., from 98 m.p.h. We do not imagine that the P. & R. 11 miles were *ever* done in 10 min. start-to-stop; like many other similar runs in the U.S.A., it was so timed to get passengers to the station in time, and the time lost by the trains was recouped on later stretches.—ED. *R.G.*]

PUBLICATIONS RECEIVED

The Annals of the American Academy of Political and Social Science, September, 1936: Railroads and Governments. Published by the Academy. Philadelphia: 3,457, Walnut Street. 9¼ in. × 6¼ in. 264 pp. Prices: paper, $2.00; cloth, $2.50 net. —This issue of *The Annals* is devoted (with the sole exception of book reviews) to a symposium, edited by Dr. G. Lloyd Wilson, of the University of Pennsylvania, under the general heading of Railroads and Government. It is divided into four parts, of which Part I, to which eight authors contribute, is concerned mainly with theoretical considerations, such as "The Significance of Transportation to Civilization" and "Transportation and Economic Planning," but it also descends to the practical in dealing with the improvement of railway services, a notable contribution in this field being an article from the pen of Dr. Lewis K. Sillcox on "Weight, Speed, and Streamlining of Railroad Equipment."

Part II deals with the domestic railway problems of the U.S.A., and covers such matters as regulation, rates, rail and road competition, and labour claims. The subject of Government or private ownership or operation is treated separately and is given Part III to itself. Six authors discuss the pros and cons from a variety of viewpoints, and probably the most interesting inclusion is an article by Mr. Joseph B. Eastman, recently Federal Co-ordinator of Transportation, and joint author of the Wheeler-Eastman Government ownership plan. The Bill for the latter failed to pass the last Congress, but will probably be reintroduced, and therefore Mr. Henry A. Palmer, Editor of *The Traffic World* attacks its principles in a critique of the plan which forms a fascinating companion to Mr. Eastman's article.

"Railroad Problems in Some Foreign Countries" forms the title of Part IV—perhaps the least effective part of the symposium. Four countries are touched upon, namely, Canada, Great Britain, France, and Mexico, but the studies bear little relation to the main idea of the volume and must be looked upon as individual articles. Sir Josiah Stamp contributes a pithy review of the railway situation in Great Britain (we refer to this in an editorial note on page 648); the Canadian problem is tackled by Mr. S. J. Hungerford of the C.N.R. and Sir Edward Beatty of the C.P.R.; and the French railways by M. Pierre Lévy. Mexico and its railway problems are ably dealt with by Sr. Alfredo B. Cuéllar, who shows as clearly as we have ever seen it expressed the unfortunate history of political repercussions on Mexican railway development.

The Annals is published six times a year, and every issue is devoted to a topic deemed to be of outstanding national or international importance. The present "Railroads and Government" issue is a useful contribution to the subject, and is given added reference value by a good index and a bibliography of previous railway contributions in the columns of *The Annals* from 1903 to date.

Iron and Steel Pocket Book. Issued by H. J. Skelton & Co. Ltd., Royal London House, Finsbury Square, London, E.C.2.—This book, published in 1919, has now been brought up to date by the issue of a supplement and several correction slips. The subject matter is given in English and French, and the information is in British and metric units. Not only are properties of the usual rolled sections given, but other less common but quite useful shapes are included. The chief tests approved by the British Engineering Standards Association for various forms of iron and steel are given in detail in very handy tabular form, and to increase its value for Continental work, an extraordinarily complete set of conversion tables for British and metric units is given.

Winter Sports in the French Alps.—The P.L.M. Railway has issued an illustrated folder, with map, enumerating the features of the winter sports resorts served by the company in the French Alps. The resorts are grouped by regions, namely, the Alpes Maritimes, Dauphiny, Jura, and Savoy, and particulars of altitudes, communications, and sporting and hotel facilities are given. The views reproduced, particularly the cover designs, are well selected and attractive. The folder is intended as a general introduction to the regions described, and more detailed particulars can, of course, be obtained from the local syndicats d'initiative after the resort to be visited has been chosen with the assistance of this P.L.M. publication.

Country Walks. Second Series. By Charles White. London: London Passenger Transport Board, 55, Broadway, Westminster, S.W.1. 6¾ in. × 4¼ in. 124 pp. Illustrated. Paper covers. Price 3d. net.—London Transport has published another collection of walks from the earlier regional booklets mentioned in our review of the first series in THE RAILWAY GAZETTE of September 4. Ramblers of widely varying tastes are catered for, a selection of walks being included for the benefit of those who find five miles or so ample for an afternoon saunter. The areas covered are in Herts and Bucks, the Windsor and Burnham Beeches districts, Surrey, Kent, and Essex. Features that will be much appreciated by users of the booklet are a countryside glossary, and a calendar of London's country. The glossary explains such familiar but not always fully appreciated countryside features as manor-houses, watermills and windmills, commons, forests, and wealds (not always clearly differentiated in general conversation), and similar points of interest. In the calendar will be found the months of appearance of blossoms and flowers, and where to look for them. General notes on train and coach services, interavailability of rail and road tickets, and cheap fare information are given in the foreword, while each ramble is prefaced with the appropriate instructions for reaching the starting point from London. Helpful and well-drawn maps and numerous full-page reproductions of photographs complete an attractive pocketful.

Metal-Faced Plywood.—The maker of Plymax metal-faced plywood—Vesta Limited, Vintry House, Queen Street Place, London, E.C.4—has published a handsome illustrated handbook showing representative applications of the material. Plymax, which may be either single- or double-faced, combines rigidity and lightness to an unusual degree. The metal surfaces are easily cleaned and resistant to vermin. They may be of galvanised steel, aluminium, copper, bronze (gilding metal), stainless steel, anodised aluminium, zinc or lead. Technical advice is available regarding the use of other metals. Plymax panels are easy to cut, owing to the thinness of the metal faces. Some very handsome effects are shown in the pages illustrative of Plymax in use, both for interior panelling and the covering of exterior walls. All concerned with the design and decoration of buildings will find this book, which is entitled "Facts about Plymax," an abundant source of ideas.

Aluminium Sections.—The British Aluminium Co. Ltd., Adelaide House, London, E.C.4, has published a catalogue of aluminium sections, fully illustrated with diagrams drawn to full size. Where requirements fall outside the very comprehensive standard range, and reasonable quantities are ordered, new tools can be made at short notice. Many decorative beadings, mouldings, and architectural sections are illustrated, as well as step edgings, stair nosings, and tread plates. The catalogue is strongly bound in attractive blue card covers, as a book which is likely to be so frequently consulted has need to be.

Engineering Works.—International Combustion Limited, of Aldwych House, Aldwych, W.C.2, has published an illustrated booklet surveying the equipment and activities of the company's works at Derby. They are built on a 55-acre rail-connected site, and consist of a machine shop, erecting shop, plate shop, foundry, pattern shop, stores, and a large open plate shop field for heavy structural engineering work. A laboratory and test house are situated on the same site, and are fully dealt with in the brochure. From the copious illustrations of every part of the works, an excellent idea can be gained both of the modern equipment installed, and of the variety and high standard of the work produced. A very striking colour plate of the foundry is given as a frontispiece.

THE SCRAP HEAP

" Large parties can travel at reduced rates," reads an announcement. The large party who takes up two seats in our carriage every morning ought to pay double.

* * *

SIGNAL BOX NAMES

Between railway stations all over the country are many lineside signal boxes which bear strange names. On Barnby Moor there is Botany Bay, a local name that probably owes its origin to the days of transportation for life. Severus, near York, recalls the days of the Roman occupation of Britain, and the Dean & Chapter box near Spennymoor has an ecclesiastical flavour. A collection of unusual signal box names would probably be equally as interesting as one of roadside inn names.

* * *

At a meeting of the Grand Trunk Railway of Canada, held in 1878, the Chairman mentioned a circumstance which has, to a small extent, been noticed in this country, where the changes in temperature are much less than in Canada. Speaking on the coal consumption he said that in very cold weather a locomotive burns a great deal more coal to do the same amount of work than in warm weather, and this was the reason why railways were more expensive to operate in northern (or cold) countries than in countries where temperatures were more equable.

* * *

RAILWAY STATION, DERBY.—The Proprietor of the BRUNSWICK RAILWAY AND COMMERCIAL INN, adjoining the Station, begs most respectfully to inform his Friends and the Public, that being suddenly, and without any cause assigned, deprived by the Secretary of the North Midland Railway Company (to which Company the above House belongs, and the only one their own property), of the privilege of sending his Porter to meet the Trains at the Station, to convey Luggage, which he had done from the opening, seven months since, by order of the Secretary of the said Company.

The Proprietor now wishes to assure those who may continue to honour him with their patronage that his House will still be open to them at all hours, and the charges remain on the same moderate scale, viz., Beds. 2s. per night, &c., and no Fees allowed to Servants.

The Public are cautioned not to be deceived by being taken to any other House but the BRUNSWICK, as that is the only one where superior accommodation and moderate charges are combined, without the impositions enforced at some other Railway Hotels.

We are indebted to Mr. H. W. Bardsley for sending us this announcement of 1844 from the columns of the " Railway Chronicle "

* * *

BLETCHLEY STATION

Bletchley station is, thanks to our worthy inspector, deserving of something more than derision. There is a garden which has gained commendation as one of the most beautiful on the whole of the L.M.S. system. Also there is only a few hundred yards away the church in which ministered another parson—in this case not " pestilent," but at this day celebrated as one of the greater English diarists—namely, Parson Cole; and finally there is the smallest railway hotel in the world actually in the station buildings. If anyone wishes to ride to catch his train there is still the mounting block under the station archway. Any railway enthusiast might well spend an hour without going outside the gates of the station, as the walls of the horse dock are built with the original stone sleepers of the L. & B. Railway, and our beautiful station horses remind us that even yet the locomotive is not the sole prime mover on the railway.—*Mr. A. L. Johnson, of Singleborough, Bletchley, in a recent letter to " The Times."*

* * *

New buses appeared on London streets today (October 1), and not only new, but blue, too. And their arrival removed a very small fly from the ointment of London Transport's enjoyment. Being monarchs of nearly all they survey, the powers-that-be at 55, Broadway looked with a jaundiced eye upon those little buses running between King's Cross and Victoria and between other main-line stations. They have been tripping to and fro for years, carrying passengers and luggage across London very conveniently, but, alas, they have not been controlled from Broadway. It was decided that something must be done, and, in a burst of generosity, it was decided to do it in a big way. " Take away your buses and leave it to us," said London Transport, and, hardly believing their ears, the railways agreed . . .

They are peregrinating buses too. Having met a boat train, they are just as willing to take passengers to Paddington as to King's Cross, including a call at Euston on the way . . . The majority of passengers decides the route. Meeting most long-distance expresses, they continue even more efficiently the old service which has been running for some years . . . Railway passengers welcome such a convenient extension of this cross-London service; taxi-drivers are not enthusiastic —*From the " Evening News."*

[Our contemporary is, of course, mistaken in saying these inter-station buses go where the majority of passengers decides; they maintain special advertised schedules.—ED. *R.G.*]

* * *

BUSES V. RAILWAYS IN 1857

The Manchester City Omnibus Company has started a line of eight omnibuses between that city and Stockport, to run daily in competition with the London & North Western Railway. The speculation has been under consideration before, but the immediate cause of the present undertaking is an attempt made this year by the railway company to compel the holders of contract tickets to get into and leave the carriages only at the termini specified in their contracts. Hitherto a contractor, paying the whole distance between the two towns, held himself at liberty to get up or down at any intermediate stopping station. The omnibuses are handsome, spacious, and comfortable, the inside being equal to most first class railway accommodation, while the fare is only two-thirds, the omnibus fare inside being 6d. for the six miles, while the charge for railway, first class, is 9d. The second class railway is 6d., and third class 4d., while the omnibus outside fare is 4d. The railway transit is much more rapid, but, as the stations in both towns are some distance from the centres of business, the omnibuses have an advantage by running to those points which gives them nearly an equality in point of time.—*From " The Engineer " of February* 13, 1857.

* * *

ROAD, RAIL—AND ROAD AGAIN

Almost coinciding with the centenary of Macadam's death, observes the *Sunday Times*, the Highways (Technical) Committee's report on the best materials under varying conditions for the construction and surfaces of roads recalls that, just as in our generation prosperity has come to the motor industry as well as to the roadside, Macadam's achievements made possible the coaching revival of Regency days. When, later, the enterprise of the Georges—Stephenson and Hudson—caused railways to threaten the supremacy of the roads, Egerton Warburton, Cheshire's sportsman-poet, did not hesitate to say:—

Here's to Macadam, the mac of all macs,
Here to the road we all ride on.
Let the steam pot boil till it's hot,
Give me the pace of Tantivy trot!

A Lot of Life in the Old Boy Yet!

A striking cartoon from the " Chattanooga Times " which is one of the many U.S.A. newspapers that now adopts a friendly attitude towards the railways in their endeavours to regain traffic by modernisation and acceleration

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

ARGENTINA

The Government and Railway Legislation

On September 7, the President of the Republic (Lieut-General Augustin P. Justo) received a deputation of railway representatives, consisting of Engineer A. Iturbe (Chairman, Local Board, Central Argentine Railway), Mr. D. M. MacRae (General Manager of the same system), Dr. Ramon Videla (Local Director, B.A. & P.R.), Mr. C. R. S. Harris (Director-General, B.A.G.S. and B.A.W.R.), Dr. Angel Sanchez Elia (Local Director, B.A.G.S.R.), and Señor E. Chanourdie (Local Director, Santa Fé Provincial Railway). The deputation thanked President Justo for the steps taken by the Government with a view to alleviating the financial difficulties of the railways, as set forth in the Presidential Award in regard to working conditions, the reform of the railway regulations, the proposed Transport Co-ordination Law, and the projected reforms in the General Railway Law (No. 2873). It also explained to the President the precarious financial position of the companies, as a result of which the nominal value of some of their shares had declined 90 per cent., and asked His Excellency to use his influence to induce the Senate to expedite the passing of the Co-ordination of Transport Bill. They pointed out that the railways were faced with the necessity of acquiring new and up-to-date rolling stock, in order to provide better services; but for this additional capital was needed, and would be difficult to obtain until there was an improvement in the financial situation. The President promised his visitors that the matter would receive his careful consideration.

The proposed reforms in the Railway Law referred to above, which were set out in full in THE RAILWAY GAZETTE of October 18, 1935, provide for, among other changes, the amalgamation of administrations; the pooling of traffic; the closing of unremunerative stations or sections; the replacing or supplementing of services by omnibuses or railcars, and the organisation of the door-to-door collection and delivery of goods.

Argentine and British Engineers' Luncheon

On August 29, the British Ambassador, Sir Neville Henderson, K.C.M.G., and the chairmen and honorary secretaries of the seven bodies comprised in the Centre of British Engineering and Transport Institutions in the Argentine Republic, were entertained by the Argentine Engineers' Association at a luncheon at which about 80 were present. Dr. Manuel F. Castello, President of the Association, welcomed the British Ambassador and the other guests representing the British engineers in Argentina, and explained that the function had been arranged as a mark of appreciation of the work done by British engineers in furthering the progress of the Republic. He expressed the conviction that the spirit of co-operation which inspired British and Argentine engineers was one of the strongest links of friendship between the two countries.

Mr. Ormond Steven (Chairman of the committee of the Centre), who responded, thanked Dr. Castello and his colleagues for their welcome, and said that British engineers in Argentina highly valued the co-operation of their Argentine colleagues, and paid a tribute to the progressive activities of the country.

The British Ambassador, who proposed the health of the Argentine Engineers' Association, thanked his hosts for their very kind reception, and expressed the belief that the co-operation of British and Argentine engineers would be as steadily continuous and productive in the future as in the past.

Second-Hand Permanent Way for Brazil

By virtue of an agreement between the Argentine and Brazilian Governments, the Ministry of Finance has issued a Decree authorising the export to Brazil of 6,520 tons of second-hand rails and 354 tons of fishplates, purchased on behalf of the Brazilian Government from the Central Argentine Railway. The materials in question, estimated to be sufficient for 100 km. of track, are intended for use in the State of Ceará. The transaction is subject to the Government regulations applicable in such cases.

Institute of Transport (Argentine & River Plate Centre)

The meeting of the above centre, held in Buenos Aires on September 4, was devoted to a discussion on a number of papers submitted in the annual competition, open to non-corporate members of the institute. Mr. J. G. Mayne, Director, Percy Grant & Co. (Chairman of the Centre) presided. Five papers were sent in, the subjects dealt with being as follow:—"Booking Office Practice"; "Road and Rail Competition"; "Comments on Combating Road Transport Competition—Merchandise Traffic"; "Road versus Rail in the Argentine Republic"; and "Free Riding on Goods and Cattle Trains." All the papers, each of which was sent in under a *nom de plume*, were highly commended, the prize, consisting of a set of technical books, being awarded to Mr. A. Hull (Student), Chief Accountant's Department, B.A. & Pacific Railway, for his paper on "Booking Office Practice."

At the same meeting, the prize, also consisting of a set of technical works, given by the chairman, was presented to Mr. R. Woolmington (Graduate), Traffic Department, B.A.W.R., winner of the previous year's competition.

British Association of the Institution of Civil Engineers

At a meeting of the above association, held in Buenos Aires on September 10, Mr. J. R. Stratford Fox, A.M.Inst.C.E., read an interesting paper on "The Timbers of the Argentine Republic and their Uses." Mr. John H. Taylor, M.Inst.C.E. (Chairman of the Association) presided. The paper, which was illustrated by lantern slides, was based on material collated from the reports of Government surveys and various botanical treatises and papers, as well as the author's own observations and research. From the 691 species of trees and shrubs indigenous to the Republic, he selected for discussion fifty of the best known and most marketable classes of Argentine timber, with notes on their uses and physical properties. The lecturer dealt at considerable length with the fuel value of certain native timbers, and showed by means of tables the results of laboratory experiments, carried out on some of the railways, with a view to determining their calorific value, as well as the results of practical tests in the use of wood fuel in the firing of locomotives.

BRAZIL

Viação Ferrea do Rio Grande do Sul. Jaguary—São Thiago—São Borja Extension

The Rio Grande Government decided to build the above line (223 km. in length) in 1932, entrusting the work to the 1st Railway Battalion under the command of Colonel Horta Barbosa; construction was begun simultaneously at both ends, the men being divided into three groups, two working from Jaguary and one from São Borja.

In order to avoid the delay entailed in ordering steel girders abroad, and the difficulties which their haulage and erection would cause, all bridges have —for the first time in the history of Brazilian Railways—been built in reinforced concrete, a policy that also served to keep money in the country, the reinforcement being supplied by the Cia. Siderurgica Belgo-Mineira of Sabará, and cement by the firms situated at Perús and Guaxindiba.

Progress and Description of the Work

In June, 1935, 27 km. from Jaguary to Curussú were opened for traffic; in November, 45 km. from São Borja to Bento Silva; and in June, 1936, the 35 km. between Curussú and São Thiago were finished, leaving 116 km. still to be completed. On 32 of these platelaying has been carried out, and a further 50 km. of the road-bed has been constructed.

The terrain between Jaguary and

São Thiago is mountainous and irrigated by several rivers, which in the rainy season are often in heavy spate; the stretch between São Thiago and São Borja consists of gentle undulations with very few water-courses. Minimum radius of curves has been fixed at 300 m., although in exceptional cases 200 m. is allowed; the steepest grade is 1 in 80, and this is met with only on short stretches. Between Jaguary and São Thiago there are 19 bridges, varying in length from 50 m. to 240 m. (See illustrations on page 669.)

The total estimated cost of construction was 34,000 contos, of which 23,000 contos have already been spent, and in spite of the fact that, since the work was begun, materials have gone up in price by 20 per cent., and rails by 40 per cent. (owing to depreciated exchange), it is expected that the estimate will not be exceeded.

New Pullman-Buffet Car, S.P.R.

As from September 21, the above railway placed in service between São Paulo and Santos a new type of Pullman-buffet car, primarily for the use of business men requiring light refreshments *en route*, who, in consequence of the accelerated service, have for some time been accustomed to take their principal meals before and after travelling, with a resultant falling off in restaurant car takings. The Pullman compartment of the coach contains 13 chairs, modelled on those provided in the existing Pullman vehicles, and for this accommodation a supplement of 2 milreis is charged.

The buffet compartment has a long counter running almost the whole length, with six seats for the use of passengers taking refreshments, and there are also three small tables for those desiring a more complete meal. Along the front of the counter are compartments for holding hats and small parcels; all appointments and fittings are in chromium steel.

At present the new car makes two return trips daily, being attached to the 8 a.m. and 4 p.m. "rapidos" from São Paulo, and returning from Santos on a new "rapido" leaving at 1 p.m. and again on the 7 p.m. service.

SWITZERLAND

Report on Closing of Branch Lines

A report on the possibility of closing certain branch lines and substituting road motor services was recently completed by two experts appointed by the Swiss Federal Railways for this purpose, Herr Zipfel, Manager of the Saurer Works, Arbon, and M. Dechevrens, President of the Chambre Syndicale de l'Industrie de l'Automobile, Geneva. The conclusions reached by the experts, after consulting railway officials to obtain comparative data, are as follow:—

For regular services, road transport could not satisfactorily replace trains in view of the higher average speed and capacity of the latter, and it would be necessary for the road vehicles to be freed to some extent from the "obligation to accept traffic" which is one of the railway handicaps. Except in one instance, road services on the routes examined would be more expensive to work than the railway, and, if stations were closed, the post offices would have to be entrusted with the booking of passengers, handling of goods, &c., and few have sufficient space or staff for this additional work. Strategic considerations also form an obstacle to the total closing of railway lines. Finally, new capital would be required for either total or partial replacement of trains by bus services on any route. The only line which could be closed to traffic without any difficulty is the branch from Otelfingen to Niederglatt (near Zurich).

As regards the use of railcars, with one or two trailers, on certain lines, the experts find that this would be economical only for trains with a small average number of passengers, and that for traffic subject to seasonal variations, and when mail, parcels, milk or livestock have to be carried, railcars are more expensive to work than steam-hauled trains.

CHINA

First London-Canton Passenger by Rail

The first passenger to make the through journey by rail from London to Canton over the newly-opened Canton—Hankow Railway was Professor Lancelot Forster, of the University of Hongkong. The rail journey via Siberia from London to Canton occupied 20 days. Professor Forster reached Hongkong on September 14.

Miscellaneous New Railways

It is authoritatively stated that the Nanking—Wuhu—Chuancheng (Ningkwo) railway—known as the Kiangnan line—is to be extended from Chuancheng to Kweichi (Kweiki), a station on the Chekiang—Kiangsi Railway about mid-way between Yushan and Nanchang. This connection will complete a chain of direct rail communication between Nanking, south-western Chekiang and Kiangsi, and eventually with Canton via Chuchow, when the Nanchang—Pinghsiang section of the Chekiang—Kiangsi line is completed. In fact both these new lines should be finished in about 18 months' time.

Canton-Hankow Extension to Whampoa Harbour (Canton)

The Ministry of Railways has decided to grant a loan of $5,000,000 towards the development of Whampoa Harbour on the Canton River. The work will be carried out jointly by the Canton Municipality and the Ministry of Railways. A spur line 13 miles long will be constructed to connect the harbour with the Canton—Hankow Railway, the cost of which will be approximately $100,000. The line will extend from Saichuen to the harbour, crossing the Canton—Kowloon Railway and the Chungshan Road, and passing through the residential district of Tung Shan. The work will take about a year to complete, and its completion will enable exports from and imports to Central China to be dealt with efficiently.

JAPAN

Air-Conditioning and New Submarine Tunnel

The first air-conditioned dining car was placed in service on the Tokyo—Osaka main line of the Imperial State Railways on August 17.

Work was begun upon the Kwammon Straits tunnel, which will connect Shimonoseki and Moji, in September. [Details of the tunnel were given in our issue of July 19, 1935.—ED. *R.G.*]

SOUTH AFRICA

New Station for Capetown

The co-ordinating committee of the South African Railways & Harbours has agreed with the Capetown Municipal Council that the existing goods station shall be abolished, and a new one erected on land to be reclaimed under the new harbour extension scheme. A new central passenger station and administrative office block is to be built when the goods station is transferred, and will occupy the sites of the existing goods station, the present Monument station, and the area now occupied by the Customs House.

VICTORIA

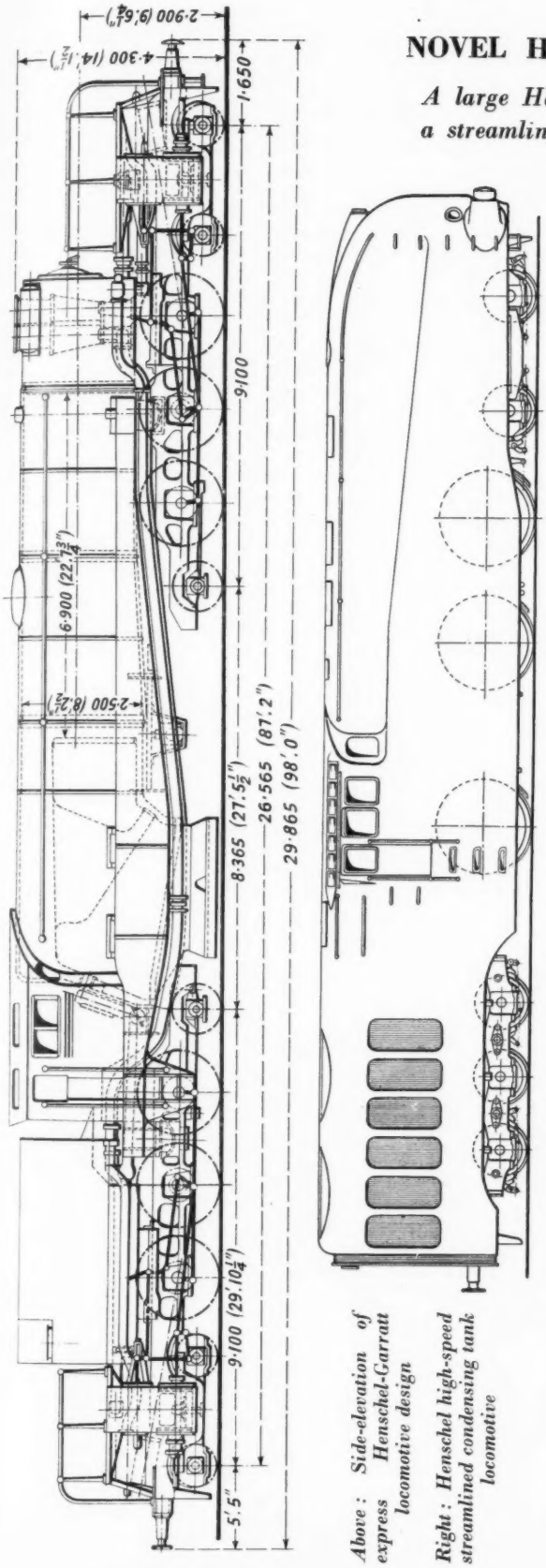
Long Rail-lengths and Sedan Railcars

The improvement of the standard of the Newport—Geelong section has now begun, and strengthening and reconditioning work is in hand. The line is to be relaid with new 90-lb. rails welded into 225-ft. continuous lengths on steel bearing plates, the first use of such plates in Victoria, the released 80-lb. rails are also to be welded into long lengths and laid in the Toolamba—Echuca section.

Six sedan railcars are to be placed in service on various branch lines where traffic is light. Each car will seat 10 passengers and carry 12 cwt. of luggage, mails and parcels. The three seats have space for (front) the driver and two passengers, and (two rear seats) four passengers each. As well as providing a more frequent, faster, and better passenger service, the introduction of these cars will eliminate the mixed train, and allow of goods trains being run at more convenient times to suit the loading of cattle and freight, and earlier deliveries in Melbourne for market purposes will be possible.

NOVEL HENSCHEL LOCOMOTIVE DESIGNS

A large Henschel-Garratt articulated locomotive, and a streamlined high-speed condensing tank locomotive



Above: Side-elevation of express Henschel-Garratt locomotive design

Right: Henschel high-speed streamlined condensing tank locomotive

THOUGH the coefficient of friction between wheel and rail imposes a physical limit to the tractive effort that a locomotive can develop with a given adhesive weight, stereotyped acceptance of conventional rules regarding the maximum permissible factor of adhesion at prescribed mean cylinder pressure often restricts unduly the designer's freedom in attaining the desired tractive effort. The possibility of removing this limitation by a rational consideration of conditions is discussed by Dipl.-Ing. P. H. Bangert* in relation to a chart showing the factor of adhesion as a function of the mean cylinder pressure (as a fraction of boiler pressure). The radiating fan-like groups of lines thus obtained, corresponding to stated types of locomotives, show the possibilities of increasing tractive effort by the use of larger cylinders with early cut-off.

The attainable indicated limit of adhesion is at about 0·25 factor of adhesion under operating conditions, and the object of increasing the cylinder diameter is not based on any supposition that the tractive-effort/adhesive-weight ratio can be further increased, but on the desire to obviate the inefficiency associated with late cut-off. In other words, when maximum tractive effort is desired, it should be obtained with lower mean cylinder pressure than $0{\cdot}85p$ (where p = boiler pressure). A locomotive with large cylinders cannot be operated at full admission without risk of slipping but, even at early cut-off, the output is greater than that of a "0·85/1:4" locomotive (*i.e.*, one with mean pressure = $0{\cdot}85p$ and tractive effort/adhesive weight = 1:4). There is an *a priori* sacrifice of efficiency under some conditions of working if locomotive construction be standardised on the 0·85/1:4 basis.

The principle of limited cut-off by auxiliary ports can, the author points out, be applied by means of Maffei admission valves, and these have been added to the low pressure steamchests of four-cylinder compound express locomotives to facilitate starting. The cut-off is limited to about 35 per cent. and the low pressure cylinders are then so large that the tractive effort/adhesive-weight values for a given mean pressure are higher than for 4-8-2 type tank locomotives. Four-cylinder compound goods locomotives are hardly capable of construction with the high axle loadings of today because the large low pressure cylinders would extend beyond the structure gauge. Exceptions are cited in the Bavarian Mallet locomotive and the German State Railway medium pressure, Series 44 locomotives. Nevertheless, the compound arrangement may be considered a means of increasing tractive effort in special cases, and this has led to the adoption of the 4-cylinder compound construction in the design of the 4-6-2 + 2-6-4 Henschel-Garratt express locomotive shown in the accompanying drawing for a maximum tractive effort of 35,000 kg. (77,160 lb.). Only with the large cylinder volumes of the compound engine was it possible to develop the high tractive effort needed to compete with electric traction in the haulage of a 400-ton express train at 55 km. (34·2 miles) an hour on a long North African incline of 1 in 43½.

In the majority of locomotives for service abroad, high tractive effort is a predominant consideration and the problem of developing maximum tractive effort with given

* *Henschel Hefte* No. 11, September, 1936, page 45

axle loading, *i.e.*, given adhesive weight, can frequently be solved advantageously by using larger cylinders.

Streamlined Condensing Tank Locomotive

The second illustration* shows a design by Henschel & Sohn A.G., for a 4-6-6 high-speed tank locomotive with condensing equipment. It is pointed out that the recovery of feed water by condensation, originally developed for service in districts where water is scarce, offers important possibilities in the development of high-speed steam locomotives by reducing the dead weight, which is the most difficult problem in meeting the competition of diesel railcar trains. About 5 per cent. of make-up feed-water is required, and the water carried must also cover the heating requirements plus a small reserve. The net saving of weight by condensing varies from case to case. Beyond a certain point, it increases with the distance run without re-filling the tanks. For example, a streamlined tank locomotive of 1,400 h.p. designed for a 600 km. (373 miles) run without re-watering weighs in running order and with full supplies—about 40 tons less than a corresponding locomotive without feed water recovery. This advantage of the condensing locomotive is, of course, additional to the advantage of pure boiler feed and the resultant reduction in maintenance and repair costs.

* From an article on Factors Influencing the Development of High Speed Steam Locomotives by Dr.-Ing. Kurt Ewald in *Henschel Hefte* No. 11, September, 1936, page 61.

Maintenance of Metal Bridges

AMONG other branches of railway engineering maintenance, the care of metal bridges in English-speaking —including the British Possessions and United States of America—and Far-Eastern territories is dealt with in a report submitted to the International Railway Congress by Mr. W. A. Fraser, Engineer, Scotland, London & North Eastern Railway, and reporter to the Congress on behalf of railways in those territories. This report, which will be discussed at next year's Paris Congress, refers to practice on 38 railway systems representing over 158,000 route miles of line. After outlining the various forms of engineering administrative and staff organisations on those systems, the report turns to the inspection of bridges. As in most other matters, the routine adopted varies considerably in different countries and on the several railways in those countries. In some cases the inspection (and maintenance) of bridge steelwork is under a separate Bridge Department with its own district and resident (or assistant district) engineers, while the masonry and permanent way remain under the ordinary engineering staff. In other instances there are special bridge examiners under the usual district inspectors, or the inspection is carried out by the engineering staff with no special additions to it for bridgework. In almost all cases, other than those of very large bridges, however, the permanent way inspector, as being the man on the spot, is expected to report bridge defects even though he does not rectify them himself. Regular periodic inspection varies widely according to climatic and other conditions, but is most usually at yearly intervals. In Great Britain, however, it varies from once a quarter to once in two years, whereas in the United States monthly inspection is common. An interesting point with regard to the Quebec and other great Canadian bridges is that they are inspected annually by a consulting engineer as well as by the railway engineers. Commercial inspection firms also carry out inspections on these bridges from time to time.

Turning to repairs and painting, the report states that the former are almost always carried out departmentally unless they are very extensive, when they are sometimes done by contract. Procedure in painting routine is more uniform in all countries that reported than other forms of maintenance. In the United Kingdom and United States scaling, cleaning and painting are sometimes done with mechanical appliances and spraying if the extent of the work justifies this procedure, but otherwise these works are everywhere done by manual labour. The usual method adopted is to scale and clean the steelwork, apply a spot coat, a first coat and lastly a final coat of paint, though the latter is frequently omitted if spraying is used. In Manchuria and occasionally in India painting is done by contract, but otherwise it is almost invariably done by departmental labour. On many very big bridges permanent staff is employed, and painting goes on almost continuously either throughout the year or at any rate during the summer months. For instance a resident inspector inspects and reports directly to the Chief Engineer upon the Forth Bridge every week, and a permanent gang of 34 men cleans, paints, and repairs it continuously; the painting of the whole structure is completed once in three years. On the other hand the Newcastle High Level, Boyne, and Barrow, and many other large bridges are given no special treatment and no special staff is employed. In Japan the Amarube Bridge, which is noted for its liability to rapid corrosion and difficulty of maintenance, is inspected every six months, but is normally repainted only once in five years. Other large bridges in that country are repainted at eight-yearly intervals. In Great Britain and Ireland practically all underbridges are deck floored, whereas those in the East have open decks, the track being carried on stringers supported by the cross girders; this arrangement has the advantage of considerable economy in maintenance.

Bridge strengthening, in so far as web and flange plates of girders are concerned, is, the report continues, carried out largely by electric welding nowadays, this being the standard practice of most administrations in several countries. On all the railways reported upon, except two in the United States, this method of repair work is carried out by their own staffs; on those two lines contractors are employed. Practically all railways use coated electrodes, but none has any special apparatus such as X-ray plant for controlling the quality of the fillet or seam welding. The London Midland & Scottish Railway, however, uses an illuminated fifteen-diameters magnifier for examining them for porosity. Except in the case of the Royal Albert bridge, electric welding does not appear to be used at present for repair works on very large bridges. The report also embodies notes upon the maintenance of movable bridges and those carrying electrified tracks. The mechanism of the former is maintained sometimes by the Civil, sometimes by the Mechanical or by the Electrical Engineer; in one instance in Ireland the Signal Engineer is responsible for it. The main consideration with bridges carrying electrified track is the period that current can be cut off and painting, &c. can be undertaken, whether the conductor lines are overhead or third-rail. It is curious that a subject of such general interest as the maintenance of metal bridges has not previously been considered by the Congress Association, but we feel sure it will be keenly discussed in Paris at the 13th session of the Congress in 1937.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Rail or Road

IN its report for the year 1935, just to hand, the South African Railways and Harbours Board again discusses its policy regarding the construction of new lines, and the advantages which road motor services possess. It is added that the network of road motor services throughout the country serves all sections of the community as efficiently as railways. It is emphasised that the capital outlay in the case of a road service is comparatively small, whereas a railway line costs some £5,000 a mile to construct, quite apart from the considerable expenditure entailed in the acquisition of the necessary rolling stock and the heavy operating and maintenance charges that have to be met. In those circumstances it will be readily appreciated that a large volume of traffic must be available throughout the year to ensure that a railway line will prove remunerative. As showing the need for caution in dealing with demands for new lines the Board states that an amount of £14,000,000, carrying interest at approximately 3½ per cent. has been spent on the construction of branch lines which, with few exceptions, are non-paying and are never likely to pay. New railways cannot be constructed only to result in increased losses, and the board is prepared to give consideration to the provision of further rail communication only on the basis of an unlimited guarantee against all losses, or in cases where it has been definitely established that road motor transport cannot adequately cope with the transportation requirements of the area to be served, and that the quantity and nature of the available traffic would make a railway line an economic proposition.

Trolleybuses

ON Sunday morning last, October 18, the London Passenger Transport Board inaugurated a new trolleybus service—the first in north-east London—between Manor House underground station and the Napier Arms, Woodford. In addition to replacing tram service 23 (Ferry Lane, Walthamstow, to the Napier Arms) the trolleybuses provide an entirely new facility, for ever since the Walthamstow Corporation tram system was inaugurated, on June 3, 1905, there has been a gap through Ferry Lane and Broad Lane separating these trams from the main London system at Tottenham. The new trolleybus service (No. 623) traverses these roads on its way to Manor House station and thus gives Walthamstow for the first time direct access to the underground railways. By trolleybus and underground the journey from the Bell Corner (Walthamstow) to Piccadilly Circus occupies 35 min., compared with 61 min. by bus. On a journey to Bloomsbury the saving will be 19 min.

In contrast with the enthusiasm of London Transport for trolleybuses is the attitude of the large railway-associated provincial bus companies. None has so far installed a single trolleybus line, even for heavy urban service, and the purchase by the Maidstone & District

Keeping the roads clear. The city of Ottawa is well-prepared for the winter snows, with this plough which, when the wings are set at their maximum spread will clear a width of 20 ft. of snow in one operation. The chassis is a Leyland Terrier, with eight forward speeds and two driven rear axles

Motor Services Limited of control of the existing Hastings trolleybus system (recorded in our issue of November 8, 1935) brought into being the only example of provincial trolleybus working under a railway associate. A fortnight ago, when speaking at a coming-of-age meeting of employees, Mr. A. D. Mackenzie, Director and Traffic Manager, Southdown Motor Services Limited, said he thought the trolleybus would have a comparatively short life, and he believed that the substitution of trolleybuses for trams would be only a temporary measure.

Renewal of Road Service "A" Licences

Opposition by railway companies to the Bouts-Tillotson application

MR. GLEESON ROBINSON, Traffic Commissioner for the Metropolitan Area and Licensing Authority for the London Traffic Area, gave on Monday, October 19, his reserved decision in the test case in which the four main line railway companies challenged the right of road hauliers to carry goods on trunk routes to and from London already supplied with adequate railway facilities. The hearing of the case had occupied six days. He renewed "A" licences for 128 motor vehicles and 42 trailers, belonging to Bouts-Tillotson Transport Limited, of London. The company had sought the renewal of licences for 139 vehicles and 42 trailers. It has depots in London, Nottingham, Bradford, Hull, Sheffield, Norwich, Bournemouth, Southampton, Newcastle, and Manchester. Licences are held in other traffic areas for vehicles used from bases in those areas, but the vehicles in respect of which application was made in the Metropolitan Area were used for trunk services from and to London.

In the course of his decision Mr. Gleeson Robinson said that the railways had objected to the renewal of the licences on the grounds that the facilities available for the carriage of goods by rail were suitable for carrying, with certain exceptions, the goods proposed to be carried by the applicants; that the capacity of the railways was not at present fully utilised, and that there had been a very heavy fall in the amount of general merchandise carried by them. Their rates and charges, they pointed out, were based on a principle settled in 1922 and adopted in the interest of traders and industry generally. They were based not on cost of service, but according to what the traffic would bear, so that certain classes of goods were carried at less than their proportionate share of the cost of carriage, and other classes at more. So long as this was to be considered in the national interest, the railways, it was argued, were subjected to competition by road transport which they could not meet, whereas road operators could choose the traffic which they wished to carry and which they found they could handle most conveniently, and could carry such traffic at rates which were in many cases very much lower than the railways could, having regard to their public obligations, afford to charge.

Mr. Robinson said that he was satisfied that rail transport could carry with few exceptions the whole of the goods which the applicants had carried in the past, that it could carry a very much greater quantity of similar goods which were at present carried by road, and that similar goods to those which were generally carried by the applicants were frequently carried by rail for more or less similar journeys with satisfaction to the persons for whom they were carried. In considering whether the facilities provided by railway transport were suitable and adequate, he was satisfied that without the facilities which the applicants provided traders would be deprived of the opportunity to avail themselves of the advantage of road transport for the goods for which road transport was able to meet their requirements more suitably.

The conditions of unfair competition between road and rail transport which existed before the system of licensing was introduced had already been ameliorated to some extent. Under the new procedure additional vehicles could not be brought into operation without the authority of the licensing authorities, who required first to be satisfied of the existence of the public need. The stricter observance of the law as to the hours of employment of drivers, vehicle inspection and maintenance, and the payment of better wages and increased licence duties had assisted in that amelioration. None of those factors had yet had time to exercise, save in a limited degree, its anticipated effect, and some of them had only had time to become operative to a comparatively small extent. It was to be anticipated that, with time, and with improved methods of enforcement, they would collectively exercise in the future a greatly increased influence on the competition to which rail transport had been subjected in the past. The operators of rail transport had not yet had an opportunity to recover from the paralysing effect of the wasteful competition to which they were subjected at a time of industrial depression, or even to bring thoroughly to the notice of the public and of trading concerns the improved facilities which they could already offer. With further time he saw no reason to doubt that railway facilities could still be improved in many respects.

There was no doubt that the lower rates charged by road transport for the carriage of many commodities constituted a very great inducement for traders to send particular goods by road transport, when there was otherwise no sound reason why such goods should not be sent by rail, and when it might be in the national interest that existing rail facilities should be more fully employed. He had no jurisdiction in regard to rates of charge for road transport. It would not be wise for him to assume that any disadvantage to which railways were subjected by having to compete at higher rates for the carriage of the commodities which were largely carried by road transport could be removed by no other means than by the refusal of licences.

It would not be wise to assume that the proper authorities might not consider, when the effect of the licensing system of road transport had had time to improve the general conditions of wasteful competition, whether the interests of industry made it desirable to reconsider the principles on which railway rates were charged. They had been introduced when road transport, which was capable of providing cheap transport for lighter commodities, had not been developed to its present extent, and when the fiscal system of the country was greatly different from what it was today.

He was satisfied that the prudent course to adopt on the present application was to apply the principle of maintaining the *status quo* within the meaning of the decision of the Appeal Tribunal in the case of Ridgewell *v.* Southern Railway, notwithstanding that the first period of licences under the Act had expired.

It is understood that an appeal is being lodged by the railway companies. The evidence was summarised in our issues of September 18 and October 2 and 9.

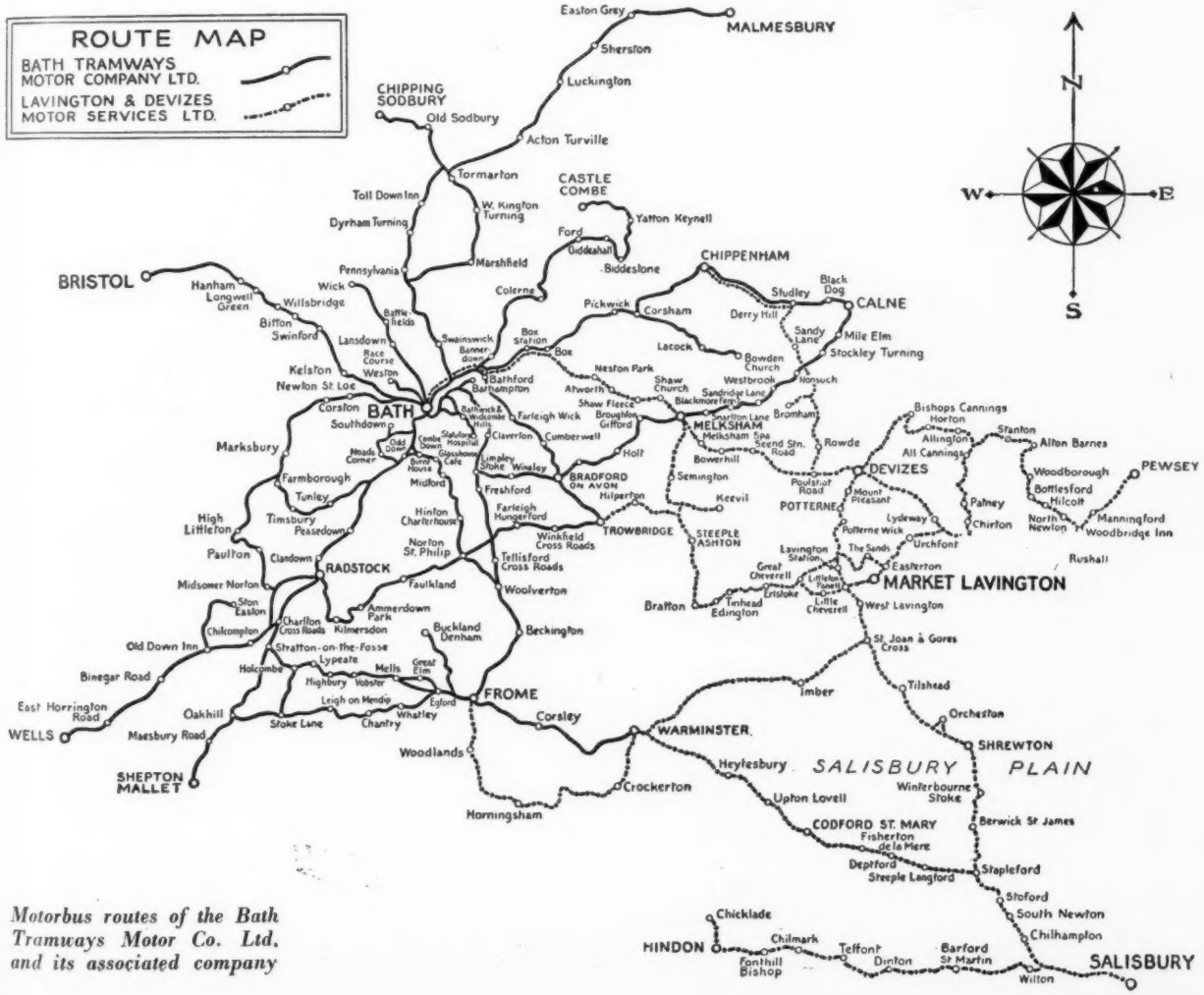
Bath Bus Services to be Railway Associated

The purchase offer of a Great Western Railway associate is recommended for acceptance by the Bath company's directors

UNTIL now the area around Bath has been one of the few districts in England not served by a railway-associated bus company. Friendly relationships have existed between the railways concerned (the G.W.R., L.M.S.R., and Somerset & Dorset Joint) and the road companies comprising the Bath Tramways organisation, but there have been no railway shareholdings in the latter. An offer has now been made, however, by the Bristol Tramways & Carriage Co. Ltd. to acquire the Bath Tramways group of companies as from December 7 next, and, as the Bath directors recommend their shareholders to accept, it is probable that the deal will be completed. The Bristol Tramways & Carriage Co. Ltd. is, of course, a subsidiary of the Western National Omnibus Co. Ltd. and therefore an associate of the Great Western Railway.

The Bath Electric Tramways Limited was formed on July 9, 1902, and took over a company called the Bath & District Light Railway Company, formed under a Light Railway Order of 1901; the tramway (or light railway) system was opened in January, 1904. The company was a pioneer in the establishment of feeder motorbus services, having placed a fleet of double-deck Milnes-Daimlers on the road as early as September, 1905. After the war it was decided to segregate the rapidly-growing motor services, and on July 30, 1920, an associated company known as the Bath Tramways Motor Co. Ltd. was incorporated. This company took over (as from January 1, 1920) for £39,935 the motor business and a foundry that had been acquired in October, 1910, by the tramways company. Since then bus services have been developed over a wide area, as may be seen from the accompanying map, for which we are indebted to Index Publishers (Dunstable) Limited, the firm that is responsible for producing the excellent official timetable of the Bath organisation.

It will be noticed that the map also indicates the routes of Lavington & Devizes Motor Services Limited. This was a business established in 1912 by local interests at Market Lavington, Wiltshire, which developed services in a territory immediately to the east of that served by the Bath



Motorbus routes of the Bath Tramways Motor Co. Ltd. and its associated company

Tramways Motor Company. The latter acquired control in the early part of 1932 by buying the debenture and share capital. The Lavington company is thus a completely-owned subsidiary. The Bath Electric Tramways Limited owns 19,600 shares of £1 each out of a total of £40,000 issued share capital of the Bath Tramways Motor Co. Ltd., and all the companies are under the same direction.

Last winter the City of Bath lodged a Bill in Parliament under which it sought power to spend a large sum in making alterations, largely architectural, in Bath. In that Bill it included powers to acquire the tram and bus undertakings operating in the municipal area. The ratepayers rejected the proposals, and the whole Bill was withdrawn. It was then suggested that the companies should negotiate terms of sale, but no great progress was made. However, the Corporation had the right this year under the original Light Railway Orders to acquire the tramway system provided its intention so to do was notified to the company before July 13 last. After much consideration, the Corporation decided not to exercise its option, and the opportunity of compulsory purchase does not recur until 1946.

At the beginning of the present month, shareholders in the Bath Electric Tramways Limited were informed that negotiations had been opened in connection with an offer for the purchase of their shareholdings, and last Friday the details were made available. Holders of 5 per cent. preference shares in the Bath Electric Tramways are offered by the Bristol Tramways & Carriage Co. Ltd. 25s. in cash or an amount of 25s. in 4 per cent. first mortgage debenture stock of the Bristol company for every preference share held. The Bath company's preferred ordinary shareholders are offered a cash price of 22s. 6d. a share or the option in respect of every two preferred shares to subscribe for one fully-paid ordinary share in the Bristol company at 47s. 6d. a share. For the Bath company's ordinary shares the price offered is 2s. 6d. a share or the right to invest the proceeds from these shares in the ordinary shares of the Bristol company at 47s. 6d. a share. So far as the Bath Tramways Motor Company is concerned, the offer (to shareholders other than the tramways company itself) is of one fully-paid ordinary share in the Bristol company plus 12s. 6d. in cash. There is no option attached to these shares.

The offer is conditional upon acceptances reaching the Bristol company not later than October 24 to the extent of not less than 90 per cent. of the shareholding in each of the Bath companies. In the event of acceptances being less than this percentage, the Bristol company has an option exercisable not later than November 13 next to acquire the shares offered to it by that date. If the required number of acceptances is obtained the deal will be completed on December 7, as we have already stated.

Alternative Fuels

SOME of the statistics regarding the development of road and rail transport quoted by Sir Philip Dawson in his presidential address to the Institute of Fuel were referred to in last week's issue of THE RAILWAY GAZETTE. No less interesting was the review of the position regarding alternative fuels to petrol and oil. After pointing out that the present output of 45,000,000 gallons of benzol is only 50 per cent. of the total possible production of our gas works, Sir Philip went on to the question of using compressed gas. British regulations limit the pressure of compressed gas to 3,000 lb. per sq. in. whereas in Germany a pressure of 4,280 lb. has been adopted and the life of the container is five years. The weight of the gas containers required per vehicle is from 4 cwt. to 8 cwt. so that only heavy vehicles such as lorries and buses can afford to employ the system. The weight of the container reduces the earning capacity of the vehicle and increases the licensing duty under the present system in this country. To make gas propulsion attractive some amendment of the regulations must be made, but representations to the Government have not so far been successful. Sir Philip said the reason for this was difficult to understand, as allowance is made for the weight of the storage batteries in electric vehicles. Satisfactory results have been obtained in Birmingham with various types of vehicles using compressed gas as fuel, and at Wallasey it is claimed that a double-decker gas-operated bus shows an actual saving, as compared with petrol at 1s. a gallon, of 12s. a day.

Suction gas is another method of operation which has not received much attention in this country although it is being exploited on the Continent. The cheapest form of suction gas is a mixture made from carbonaceous materials and water; its use presents some disadvantages compared with heavy oils and petrol, such as the space required and weight and cost of the gas producer plant, its maintenance and delay in starting up. Germany, Austria, Italy, and France have been foremost in adopting suction gas plants for road haulage which can use coal, coke wood, reeds, and similar substances. In Germany it has been found that 25 lb. of sawmill refuse is equal to 1 gall. of petrol, and 5-ton lorries equipped with 45-h.p. engines have proved very satisfactory. The use of wood for producer gas has gone so far that many wood filling stations are provided, more particularly in Bavaria. Trials were made some time ago under R.A.C. auspices of two lorries using anthracite coal and coke respectively in producer gas plants.

Another alternative to petrol is electricity in the form of storage batteries. The simplicity of this method of traction has much to recommend it, said Sir Philip, but it is not adapted to long distance work or to hilly routes. In 1935 there were 1,890 such vehicles in use in this country, and they have been adopted by the City of Birmingham since 1918 for collecting refuse; the daily mileage of each vehicle is approximately 15 miles and the average life of the batteries is 38 months. The average current consumption is 1·85 units a mile run. With a price of current 0·4262d. a unit, the total running costs are stated to be 1·63d. a mile run. Such vehicles are specially suitable where there are frequent stops and where a high rate of speed is not required, such as delivery vans for milk, bread, coal, small merchandise, and removal of refuse, for a daily run not exceeding 60 miles or so. To make them profitable, frequent charging stations and a cheap supply of current are necessary, and they should be ideal customers for electric supply undertakings, subject to their number being sufficiently great to justify the expense of installing charging stations.

In Germany accumulator road and rail vehicles are in commercial use. On the road, with an average speed of 20 miles an hour, the battery used is composed of 20 cells, the lorry has a carrying capacity of 3 tons with an average run per charge of 40 miles, and these lorries are able to negotiate short inclines of 8 per cent. The German Post Office is also using 2,400 battery vehicles for house-to-house deliveries.

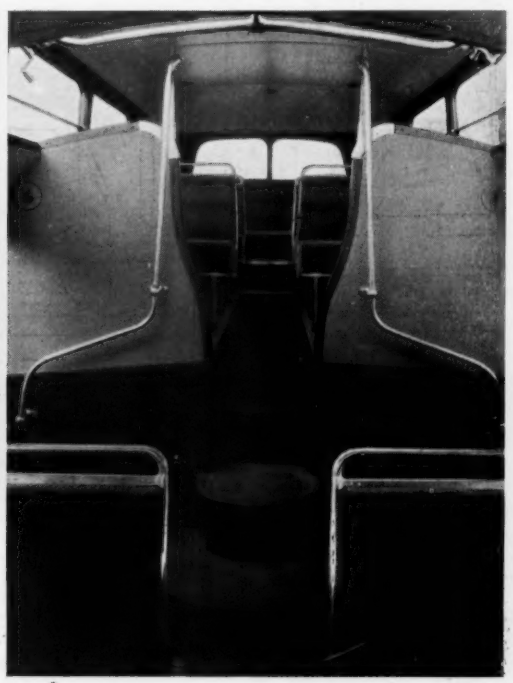
London's New Inter-Station Buses

Unusual design for special service

IN THE RAILWAY GAZETTE of October 2 brief particulars were given of the new design of bus placed in inter-station service by the London Passenger Transport Board, and it is now possible to supplement that information. Eight of the buses are in service and they work between Paddington and Victoria, King's Cross, Marylebone, Victoria and Waterloo, and St. Pancras, Euston, Victoria, and Waterloo. They are reserved exclusively for passengers and friends travelling by Continental boat trains, and, whether coming from Scotland, Ireland, Wales, the West of England, the Midlands or other parts, or returning thereto, these travellers are provided with a direct link in their journey.

This view gives a good impression of the general lines of the new L.P.T.B. inter-station buses. The chassis is a petrol-engined Leyland Cub

In its distinctive shape the bodywork of the new vehicles bears a resemblance to what are often termed observation coaches although, of course, sight-seeing was not the inspiration of the design. One of the leading requirements was a vehicle which would provide large luggage space and also enable loading and unloading to be carried out as rapidly as possible. The buses have to meet trains and, although they are scheduled to run non-stop between the main line stations, it can readily be understood that traffic delays at one or two points along the route make it difficult to arrive with an excess of time for passengers and baggage to be transferred to the train. There is room for a ton of luggage in the compartment provided on the new vehicles. With one wide door at the back and smaller doors at each side, the baggage can be stowed and unloaded most expeditiously. The work is also assisted, especially after dark, by three lamps which are switched on automatically as the doors are opened. It is obvious that such a scheme has definite advantages over the older idea of placing the luggage on the roof.



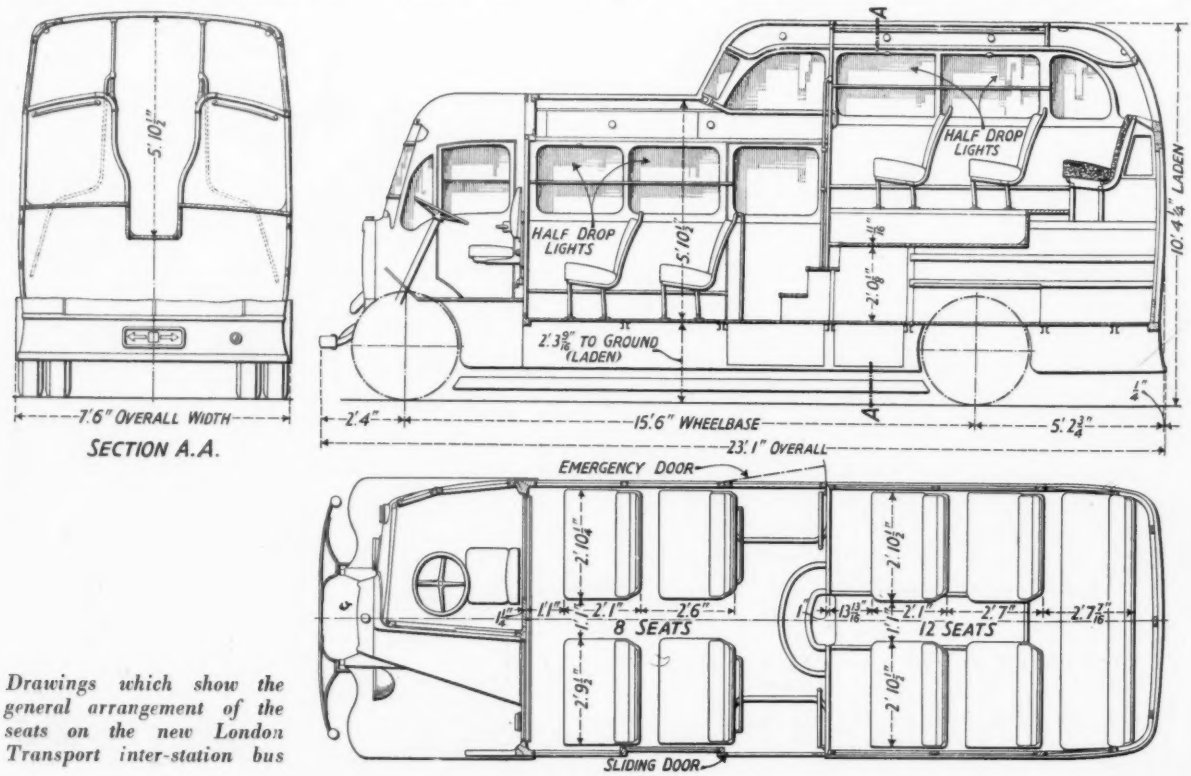
These two views give a good idea of the seating arrangement of the new inter-station buses. The view on the left is looking down from the upper to the lower compartment, while the other view shows the approach to the 12 seats on the raised deck

That, then is the reason why some of the passenger seats are in the elevated position. Actually there are 12 seats in that compartment which is reached by three steps from the lower one, in which there are eight seats. The bodies, designed at the Chiswick works of London Transport and built by Park Royal Coachworks Limited, are of the all-metal type and are mounted on the Leyland Cub chassis. There is a door on each side of the vehicle; that on the near side is of the sliding type, while the other on the opposite side, is of the swing pattern. The inside of the vehicle is in accord with the smartness of the exterior, the tubular metal framework (in M.G.7 stainless alloy) of the seats assisting in that matter, as also do the Rexine panels on sides and roof. The seats are fitted with Dunlopillo seats and squabs, ensuring comfortable riding for all passengers. In order to facilitate the cleaning of the bodywork, rounded corners are to be found wherever they are an advantage and fillets in the angled joints of floor and sides also assist in this respect. The floor is covered with $\frac{3}{8}$ in. linoleum.

A view which shows the large doors of the luggage compartment as well as one of the small ones. The sliding door for passengers will also be noted

The petrol-engined Leyland Cub chassis with its rapid acceleration is specially suitable for the sort of task set these vehicles and the handiness is an asset in driving into and out of the stations. Incidentally, these are the only petrol-engined Cubs in London Transport service, the other Cubs (detailed in the table in our issue of July 31 last) being diesel engined. The driver is given an adjustable seat and he has three mirrors, enabling him to see what is happening on each side of his vehicle as well as providing him with a view of its interior. He has a quick-acting signalling window at his side, as well as side and rear traffic indicators.

With their blue livery with broad cream band on which the title " Inter-Station " is painted, and their distinctive outline, the buses should be recognised immediately by intending passengers. The services are not at present operated on Sundays, when other arrangements are made by the railway companies for the conveyance of the comparatively small number of through passengers.



Drawings which show the general arrangement of the seats on the new London Transport inter-station bus

Railway Road Motor Services in South Africa

The recently-issued report of the Railways and Harbours Board shows that these services continue to expand in their scope and usefulness, necessitating considerable additions to the equipment

THE road operations of the South African Railways and Harbours Administration fall under the two following distinct categories:—

(*a*) Departmental cartage services, which are operated for the collection and delivery of goods consigned by rail and,
(*b*) road motor services, which are operated either independently from or supplementary to the rail services.

Services of the latter category, with which this article purports to deal, are operated by the administration, subject to the bye-laws of any local authority having control of the roads, and also subject to the provisions of the Motor Carrier Transportation Act, under powers granted in section 3 (k) of the Railways and Harbours Regulation, Control and Management Act, 1916, as amended by Act No. 40 of 1930.

The first road service operated by the administration was inaugurated as far back as 1912. Growth in the services has been most marked both as regards mileage and traffic since 1925, the figures being as follow:—

Year ended March 31	Route mileage	Vehicle mileage	Traffic conveyed		
			Passengers	Goods	Cream
			No.	Tons	Gallons
1925 ...	226	Not available	190,084	7,547	—
1926 ...	1,551	478,803	268,374	9,958	94,735
1927 ...	4,282	1,218,793	504,082	24,891	192,738
1928 ...	7,349	2,648,754	947,573	62,799	390,591
1929 ...	9,285	4,144,368	1,450,552	112,791	577,825
1930 ...	11,295	5,286,555	2,318,537	168,422	974,461
1931 ...	11,117	5,358,138	2,468,951	242,918	872,621
1932 ...	10,493	5,217,823	2,450,841	273,520	944,780
1933 ...	9,928	4,583,301	1,993,242	226,991	979,960
1934 ...	10,535	5,049,918	2,036,354	318,109	810,486
1935 ...	10,971	5,215,956	2,155,243	395,546	1,008,080

The headquarters control of the road motor services is in the hands of a manager, who is responsible to the General Manager and who deals with all questions of policy, tariffs, and conditions of transport affecting the services on all systems. With the exception of South-West Africa, the service of each system is supervised by a Road Transport Officer directly responsible to the System Manager. The large majority of the services are operated on a dual-purpose basis, that is, both passengers and goods are conveyed on the same vehicle, but in certain areas, where the volume of traffic justifies such a course, separate services are worked for passenger and for goods traffic. In most cases the services act as feeders to the railway.

The value of vehicles and equipment for the road motor services as at March 31, 1935, amounted to £710,842, while the accounts for the year ended March 31, 1935, show a gross revenue of £483,761 against an expenditure, including depreciation and interest on capital, of £424,604, leaving a profit of £59,157. The revenue per vehicle mile worked out to 22·1d. an increase of 0·6d., while expenditure on the same basis was 19·4d., a decrease of 0·5d.

If the road services are viewed from the standpoint of a separate commercial undertaking, the position is that the actual earnings, based on the existing charges, are, on the whole, insufficient to cover working expenditure. It is the policy of the administration that the services should, as far as possible, be self-supporting, and the charges are designed with the object of covering the costs of the services as a whole. Due, however, to the relatively small volume of traffic offering, the tariffs for both passengers and goods are generally higher than those applicable to railway services, but in the last year considerable reductions have been made in some of the charges.

With the exception of suburban services and those services where the density of traffic warrants reduced fares, the standard passenger fare for adults is 3d. per passenger

Decorations to mark the opening of a new motorbus service by the South African Railways in Swaziland indicate the appreciation with which the facilities are regarded

mile for first class and 1½d. per passenger mile for third class. Goods traffic has been divided into four classes, the standard rates being based on considerations similar to those applicable to railway tariffs. It has been suggested that the railway classification and rates should be applied to the road motor services, but, as this would probably result in the services being operated at a loss after allowing for contributory value, such a change would appear to be inadvisable.

Cost of Operation

In the report of the Granet Commission it was stated that, while it is difficult to see any immediate likelihood of an improvement in the financial position of the road motor services being effected by either increasing or modifying the charges, there may well be some scope for economy in connection with the type of vehicles employed. The tendency since 1925 has been to standardise on particular four-wheeler and six-wheeler vehicles, and, while not minimising the advantages to be obtained from standardisation, the position should be frequently reviewed in order to obtain a knowledge—under working conditions—of other types of vehicle which may have become more economical. It may be noted here that in the last year or so a good many mechanical horses have been placed in service.

One of the Thornycroft six-wheelers with a mixed load of goods just about to cross a stream

There is little doubt, for instance, that the diesel engine has developed into an economic factor of the highest importance. The compression-ignition engine has the advantages of a relatively low fuel consumption, and of giving an appreciable reserve of power at a small increase in fuel cost. This reserve of power enables the average speed to be raised or a greater load to be carried. The purchase of a number of the latest type of road vehicles, equipped

Thornycroft lorry negotiating difficult country in Natal, in the service of the South African Railways

A modern contrast. A Karrier Cob tractor with its trailer, alongside a team of "hairies" that is being supplanted by the mechanical horses in South African railway service as elsewhere

with compression-ignition engines, to be tried on one or two systems in order to test the existing standardisation policy and also to assess the possibilities of the new types under actual working conditions, was recommended in the report of the Granet Commission. This report emphasised the importance of investigation on the spot by the engineers of the administration of the working of the oil engines and some examples have been purchased and fitted into vehicles.

Co-ordination

In various parts extensive new roads with high carrying capacity have been built parallel to railway lines, little has been done by co-ordinated effort to construct or improve roads to open up new areas and to develop agricultural areas in co-ordination with the railways. These disabilities would disappear if the country had a Transport Board, responsible to a Ministry of Transport, endowed with authority to carry out a national road policy in close co-operation with the railway system. The funds available for road purposes would be consolidated and used to the best advantage; uniformity of method and incidence of road and road motor vehicle taxation would be established.

It is added that as the needs of the country as a whole would be properly reviewed it could be of material assistance in dealing with the unemployment problem, as relief road works would be undertaken according to actual necessity, irrespective of locality and with due regard to the subsequent, permanent and practical transport utility of the roads, railways, and all other methods of transport in the Union.

A striking tribute to the value of these motor road services was the comment of the Railway Affairs Commission, as follows: "We have formed the opinion that the operation of these services has been justified and that the Administration, in introducing these developmental services, has assisted considerably in opening up new areas and stimulating agricultural development in other areas."

In the annual report of the Railways and Harbour Board for the year to December 31, 1935, just issued it is stated that the services "continued to be operated with great benefit to farmers and residents in the country districts and although the use of the privately-owned motorcar has extended to the most remote parts of the Union and to farms situated in isolated places, it is pleasing to record a year of substantial progress. . . ." At the end of the year the route mileage aggregated 11,308, new services and extensions accounted for 638 miles while those on 164 miles were withdrawn, leaving the net increase over the previous year 474 miles. The report also states that in 1935 the revenue earned by the services was £485,142 and the expenditure £414,731, the former showing an increase of £7,951 and the latter a decrease of £28,187. The surplus was £70,411, more than double that of the previous year.

It is pointed out, however, that the decrease in expenditure is attributable to the fact that during 1935 it was not possible, owing to abnormal demands on the plant, to release from traffic all vehicles requiring a general overhaul. During the year 164 new vehicles were ordered and as they were placed in service the arrears of repair work were undertaken. It is expected that this will considerably inflate the next expenditure account and in turn reduce the margin of profit. The new purchases, with additional repair shop equipment, raised the capital expenditure by £35,159 to a total of £722,922. Included were 20 passenger vehicles, 85 5-ton and 26 10-ton goods and dual purpose vehicles and 33 trailers. The plant at the end of last year was made up of 68 passenger, 314 5-ton and 30 10-ton goods and dual purpose vehicles and 243 trailers. The building of bodies for the new vehicles was entrusted to the principal repair shops in the Union.

All the traffics showed substantial increases. Passengers totalled 2,468,256, goods 396,520 tons and cream 1,238,230 gallons.

One of the passenger vehicles used on the S.A.R. Road Motor Services, at a railway station. This bus is also mounted on a Thornycroft chassis

Gardner Diesel-Engined Vehicles in Rhodesia

DURING 1935 experiments in the use of crude-oil fuel were made on the road motor services operated by the Rhodesia Railways, a Gardner compression-ignition four-cylinder L.W. engine being fitted to an "A.4." three-ton six-wheeled Thornycroft lorry working on the two routes out from Bulawayo to the Lonely Mine (52 miles) and to the Umgusa Valley (41 miles). The resultant satisfactory service, coupled with the economical running costs compared with petrol engines, caused the Rhodesia Railways to place further orders for Gardner diesel engines to substitute in petrol-engine lorries, and the conversion of a further five lorries to oil fuel has been recently completed. Two more "A.4." three-ton Thornycrofts have been converted, while three "X.B." five-ton Thornycroft lorries have been equipped with five-cylinder L.W. engines; all are six-wheeled vehicles. The conversion from petrol to diesel has shown itself to be justified not only by the actual economies in running, but also by the fact that the fleet of vehicles in service is sufficient to cope with the requirements of the present Rhodesia Railway road motor services and the life of the existing vehicles is far from expended.

One of the passenger vehicles used by the Rhodesia Railways between Fort Victoria and Umtali. The composite body is mounted on a Thornycroft chassis which has been fitted with a four-cylinder Gardner oil engine

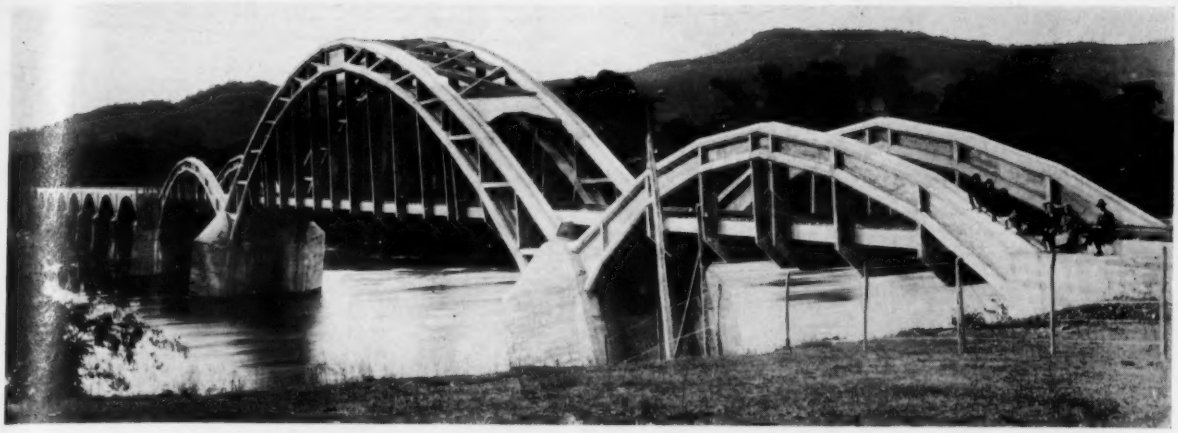
For the new passenger road service recently inaugurated between Umtali and Fort Victoria via the new Birchenough bridge across the Sabi River, a passenger bus has been imported by the Rhodesia Railways, fitted with a specially designed body constructed by the Park Royal Coachworks, Ealing, that affords accommodation in the front portion for eight European passengers in comfortable green-upholstered bucket seats and for twenty native passengers in the rear compartment: the two passenger portions are divided by a centre luggage section. The power unit is a Gardner 4.L.W. compression-ignition engine, of 29 h.p., and on a long trial trip at an average speed of 20 m.p.h. the fuel consumption was 18 miles a gallon, using a light diesel oil costing 10d. a gallon.

This road service, made possible by the building of the Birchenough bridge, opens up a new tourist route through Southern Rhodesia and provides an alternative to the double journey by train between Bulawayo and Umtali. It is now possible for tourists from the south to enter Rhodesia at Beitbridge, travel by a railway road service to Fort Victoria (for the Zimbabwe ruins), thence by the new road service to Umtali, which meets connecting services at the Birchenough bridge to Chipinga and Melsetter in the beautiful mountainous eastern districts. The return journey to the south can then be made by rail via Salisbury, Bulawayo, and Mafeking. Through rail and road bookings can be made and special fare concessions for parties of four are in operation. It is anticipated that, when it becomes known, the new route will attract many tourists.

At the present the passenger bus service operates twice weekly, performing the 195-mile journey from Fort Victoria to Umtali in eleven hours. Refreshments are obtainable at certain stopping places *en route*. As well as catering for the tourist, the new road service provides transport for the many natives returning to their kraals after employment on the Rand. In order to attract attention to this facility, postcards depicting the new bus and quoting the native fares were widely distributed in Rhodesia.

Until the opening of the Birchenough bridge the road service from Fort Victoria only went to Sosera, a 48 mile run, while from the other end there was the service from Umtali to Chipinga, which is joined by the new service at the Birchenough bridge 80 miles from Umtali.

It may also be recalled that the bulk of the materials required for the building of the bridge were conveyed by the motor services from Umtali, the total weight carried by the railway lorries amounting to 2,600 tons. The sections varied from 3 to 8¼ tons in weight and from 40 to 53 feet in length. The 80 miles of road included many long and steep gradients.



Jaguary River bridge, 1 *span* 60 *m.,* 2 *spans* 30 *m., and* 8 *spans* 15 *m.*

Franklin viaduct, arched span 40 *m., and* 19 *trestle-supported spans* 8 *m.; height* 28·5 *m.*

Rosario River bridge, 1 *span* 60 *m. and* 4 *spans* 15 *m.*

FERRO-CONCRETE BRIDGES ON THE JAGUARY—SAO BORJA EXTENSION, BRAZIL (*See page* 656)

EUROPEAN TIME TABLE CONFERENCE, MONTREUX-TERRITET, OCTOBER 12-17, 1936

Above: General assembly. Right: In the conference room—Right-hand, Mr. A. L. Gibson, Continental Traffic Manager, L.N.E.R.; Left-hand, Mr. L. H. K. Neil, Assistant to Continental Traffic Manager, L.N.E.R.

(See page 677)

Photos] [B. Fransioli

The wording Paris-London and vice versa is now becoming a recognised feature of the familiar route boards used on "Wagons-Lits" carriages. The inauguration of the through service between the British and French capitals, via the new train ferry, was fully described in last week's issue

RAILWAY NEWS SECTION

PERSONAL

INDIAN STATE RAILWAY COMMITTEE OF ENQUIRY

Following the recommendations contained in the reports of Sir Otto Niemeyer and of the Indian Public Accounts Committee that there should be an expert examination of the whole position of Government-owned railways, the Government of India—states the India Office—has appointed the following as a railway enquiry committee:—

Sir Ralph L. Wedgwood, C.B., C.M.G., Chief General Manager, L.N.E.R.; and

Mr. W. A. Stanier, Chief Mechanical Engineer, L.M.S.R.

The committee will be assisted by Mr. A. Forbes Smith, Chief General Manager's Assistant for Rates and Statistics, L.N.E.R.

Mr. L. H. Kirkness, Secretary to the Indian Railway Board, and Mr. B. M. Strouts will act as Joint Secretaries. The terms of reference are briefly outlined on page 652.

At the 24th Annual Ordinary General Meeting of the Council of the British Engineers' Association, held in London on October 22, the following officers were elected for the ensuing year:—

President

Lt.-Col. Lord Dudley G. Gordon, D.S.O., Managing Director of J. & E. Hall Limited, Dartford.

Members of Council

Mr. Charles Day, Chairman and Managing Director, Mirrlees, Bickerton & Day Limited, Stockport.

Mr. Robert B. Lister, Director, R. A. Lister & Co. Ltd., Dursley.

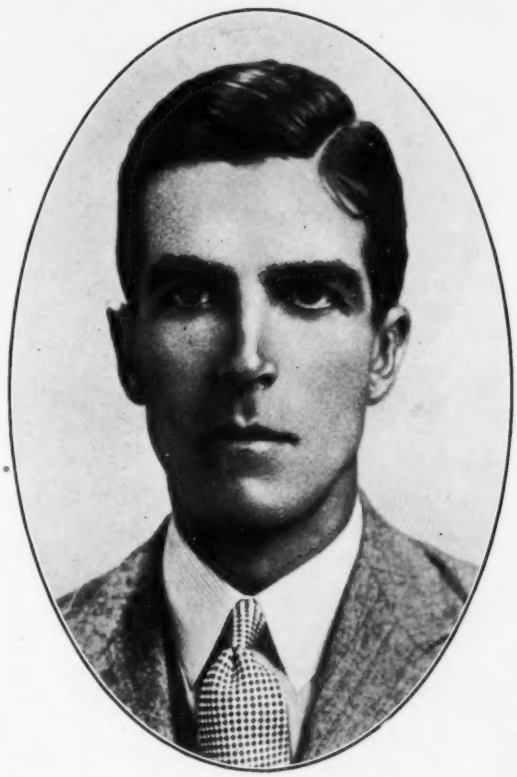
Capt. K. Reavell, Director, Reavell & Co. Ltd., Ipswich.

Mr. Eric A. Robinson, Managing Director, the Superheater Co. Ltd., London.

Sir Josiah Stamp, G.C.B., G.B.E., Chairman and President of the Executive, L.M.S.R., has accepted the Presidency of the Railway Benevolent Institution for the year 1937, and will preside at the Anniversary Festival on Tuesday, April 6 next.

Mr. A. C. Harris is retiring on October 31 from the dual position of Assistant in the Central Office and Principal Welfare Officer, L.M.S.R.

Mr. George Brian Fraser Neele, who, as announced in our issue of September 18, has been appointed to succeed Mr. C. W. Bayne as General Manager of the Leopoldina Railway, comes from a family connected with the operation of railways since their early days. His father, the late Mr. C. W. Neele—whose death we announced in our issue of April 24 last—was for many years Electrical Engineer of the Great Central Railway, and also of the Great Central Section of the L.N.E.R.; and his grandfather, Mr. G. P. Neele, had nearly 50 years' railway service before his retirement from the post of Superintendent of the Line, L.N.W.R., in 1895. Mr. G. B. F. Neele was educated at Aldenham school, and began his railway career in the Traffic Department of the Central Argentine Railway in March, 1914. On his return, in 1919, from war service in France, where he served with the Royal Engineers, Mr. Neele was transferred to the then newly established train control organisation of the C.A.R., in which he held various posts, being appointed Assistant Chief Traffic Controller, Rosario, in 1922, and in the following year District Traffic Controller. In 1924 he was appointed Assistant District Traffic Superintendent, Retiro (Buenos Aires). During 1925 his duties were concentrated upon the extension of suburban electrification and reorganisation of terminal access lines at Buenos Aires, and in June, 1926, he was appointed District Traffic Superintendent for the Buenos Aires District. In September, 1926, Mr. Neele left the C.A.R. to join the Central Uruguay Railway of Montevideo, as Assistant to the General Manager, being subsequently appointed Assistant General Manager in 1927. It was in March, 1930, that he took up his duties as Assistant General Manager on the Leopoldina Railway, in Rio de Janeiro, the appointment he vacated in August to become General Manager.



Mr. G. B. F. Neele,
Appointed General Manager of the Leopoldina Railway (Brazil)

MR. F. R. POTTER

On Wednesday evening the Divisional Superintendents of the Great Western Railway and other members of the Superintendents' Conference, entertained Mr. F. R. Potter to a complimentary dinner on his appointment as Superintendent of the Line. In the absence, owing to illness, of the Senior Superintendent, Mr. F. G. Wainwright, Divisional Superintendent, Cardiff, Mr. Trevor Roberts, Divisional Superintendent, Newport, presided, and in a sincere speech proposed the health of Mr. Potter, and expressed the pleasure of all present on the honour paid him by the directors in appointing him Superintendent of the Line. He assured him of their loyalty and co-operation in all circumstances. The appointment was a most popular one, but nevertheless, it was certain that Mr. Potter would not have been appointed Superintendent of the Line unless he was in every way fitted and capable. Mr. F. C. A. Coventry seconded the toast and Mr. Potter replied. Mr. J. R. Morris, Divisional Superintendent, Chester, acted as honorary secretary in organising the function.

Mr. R. H. Paterson has been appointed to officiate as Deputy Controller of Stores, N.W.R., India.

Mr. G. B. Lace has been appointed to succeed Mr. Christison as Chief Clerk to the Railways Commissioner in South Australia.

Mr. W. G. Hills, M.Inst.T., Deputy General Manager (Operating and Commercial), has been appointed Acting General Manager, Ceylon Government Railway. Mr. Hills, who was born in 1885 and is the son of Mr. W. H. Hills, sometime Superintendent of the Line of the Great Northern Railway, began his railway career on that system, but was appointed District Traffic Superintendent, Ceylon Government Railway in 1915. Within six years he rose to the position of Assistant Traffic Manager. In 1924 he became Assistant to General Manager, and in 1926 Divisional Transportation Superintendent. He was promoted to his present substantive post of Deputy General Manager (Operating and Commercial) in 1932.

Mr. J. G. Smith, M.I.Loco.E., M.Inst.T., has been appointed Acting Deputy General Manager (Operating and Commercial), Ceylon Government Railway. Mr. Smith received his training on the London & South Western Railway, both at Nine Elms and Eastleigh. He entered the service of the Ceylon Railway in 1912, and was appointed District Locomotive Superintendent in 1916, Assistant to General Manager in 1928, and Divisional Transportation Superintendent in 1931.

Gate Mudaliyar G. F. Perera, A.M.Inst.T., Assistant to General Manager, Ceylon Government Railway, has been appointed Acting Deputy General Manager (Administrative). Mr. Perera's career has been one of steady progress. Joining the department as a clerk in 1895, Mr. Perera worked in various capacities. In 1928 he was appointed Assistant Divisional Transportation Superintendent, and in 1932 he was promoted Assistant to the General Manager. Mr. Perera is the first Ceylonese to be appointed to the responsible post of Deputy General Manager. In 1932, Mr. Perera was invested with the rank of Mudaliyar, and in 1935 he was made Mudaliyar of the Governor's Gate. He is the author of the book entitled "The Ceylon Railway."

Mr. J. G. Smith,
Appointed Acting Deputy General Manager (Operating & Commercial), Ceylon Government Railway

Mr. W. G. Hills,
Appointed Acting General Manager, Ceylon Government Railway

Mr. C. W. Kinder, C.M.G., M.Inst.C.E., for many years Engineer-in-Chief and General Manager, Imperial Chinese Railways, whose death we announced in our issue of August 14, left estate valued at £18,337 (£18,239 net).

We regret to record the death, on October 17, of Sir John Hunter, K.B.E., who until March last was Chairman of Sir William Arrol & Co. Ltd. Aged 73, he had spent over 50 years with the firm founded by his uncle Sir William Arrol, builder of the Forth, Tay, Tower and other well-known bridges. During the war Sir John was Director of Factory Construction mainly in connection with the National Projectile Factories, and was member of the Air Council, was created a K.B.E. in 1917, and was awarded many foreign decorations also. Prior to becoming Chairman he was joint Managing Director of Arrol's; he was still a Director up to the time of his death.

Mr. E. H. Stibbs has retired from the position of Assistant Divisional Superintendent, Newport, G.W.R., after 44 years' service with that railway which he joined in the Goods Department at Paddington. He was transferred to the Traffic Department of the Divisional Superintendent's office (Paddington) in 1905, and in 1915 was appointed Chief Train Controller in the London Division. This position he occupied until 1923, when he became Chief Clerk to the Divisional Superintendent, Pontypool Road. In July, 1930, Mr. Stibbs was appointed to the position from which he now retires.

With regret we note the recent death of Mr. John Lennox, a Director of Colvilles Limited since 1931, and previously of David Colville & Sons since 1913. Mr. Lennox was well known in West of Scotland iron and steel circles.

Lord Burghley, a Director of the L.N.E.R., has been appointed Chairman of the City board of the London & Lancashire Insurance Company.

Mr. P. S. A. Berridge, Executive Engineer, Bridges, N.W.R., India, has been granted one year's leave as from October 15. Mr. Berridge has been a frequent contributor to THE

Gate Mudaliyar G. F. Perera,
Appointed Acting Deputy General Manager (Administrative), Ceylon Government Railway

RAILWAY GAZETTE of recent years, especially in respect of photographs.

Mr. F. Bushrod, O.B.E., Superintendent of Operation, Southern Railway, is retiring on October 31, and will be succeeded by Mr. H. E. O. Wheeler, O.B.E., General Assistant to the Traffic Manager.

Mr. Wheeler, who has been General Assistant to the Traffic Manager since February, 1930, is the son of Judge Wheeler, K.C., and was born in 1878, educated at Windlesham House School and Uppingham, and, in 1893, joined the Audit Accountant's Department of the former South Eastern Railway. He was, however, soon transferred, first to the office of the District Superintendent at New Cross, and 12 months later to the office of the Superintendent of the Line. In the course of 13 years' service in this office he gained general experience in all sections of railway operation, and in 1911 was promoted to be Traffic Superintendent of the London District, a position he held until 1918. Thereafter and until 1920 Mr. Wheeler was Acting Assistant Superintendent, and was then appointed Assistant Superintendent (of the South Eastern & Chatham system.) As a result of the amalgamation he was appointed Assistant Operating Superintendent for Train Services, Southern Railway, in the Autumn of 1923, and in February, 1930, became General Assistant to the Traffic Manager, the position he now vacates on promotion to be Superintendent of Operation. Mr. Wheeler was decorated with the O.B.E. in 1916.

Mr. H. E. O. Wheeler, O.B.E.,
Appointed Superintendent of Operation, Southern Railway

From *The London Gazette* of October 16:—

Regular Army; Corps of Royal Engineers: General Sir Bindon Blood, G.C.B., G.C.V.O. (retired pay) Colonel Commandant, is appointed Chief Royal Engineer (October 16).

Supplementary Reserve of Officers; Royal Engineers, Transportation: Major F. Holland, on completion of his tenure of command, ceases to belong to the Supplementary Reserve of Officers (October 6). Mr. Holland is Assistant Divisional Engineer, Taunton, G.W.R.

Mr. G. W. Hayter, O.B.E., has been appointed General Manager of the Northern General Transport Co. Ltd., in succession to Mr. John Petrie, who is shortly retiring from the transport business; the appointment dates from November 1 next. Mr. Hayter was born in 1888 and educated at Christ's Hospital and Coventry Technical Institute; from 1903 to 1910 he was a pupil with the Motor Manufacturing Company until 1905, and afterwards with the Daimler Company. Thereafter and until the outbreak of war he was in automobile journalism, but in 1914 he joined the Mechanical Transport Section of the R.A.S.C., and saw active service in France and Italy. In 1917 Mr. Hayter was promoted to be Chief Inspector of Mechanical Transport in Italy, was mentioned in despatches in 1918, and was awarded the O.B.E. From 1919 to 1922 he was attached to the War Office, and, on leaving the Army in the latter year, was appointed Chief Engineer to the Northern General Transport Co. Ltd.; though he now becomes General Manager of this important railway-associated bus company he will continue to act as its Chief Engineer. This concern and the Tyneside Tramways & Tramroads Co. Ltd., of which also Mr. Hayter becomes General Manager and Chief Engineer on November 1, together have a fleet of about 500 vehicles. He has been responsible for the design and construction of, *inter alia*, a 45-passenger single-deck bus, the largest seating capacity yet produced, and is a M.I.A.E.

Mr. G. W. Hayter, O.B.E.,
Appointed General Manager and Chief Engineer, Northern General Transport Co. Ltd.

Mr. A. J. Pragnell resigned from the service of the Great Western Railway on October 17 on his appointment as Deputy General Manager of H.E.H. The Nizam of Hyderabad's State Railway to undertake the development of the railway-owned road transport service in that state. He joined the Chief Engineer's office of the G.W.R. in 1912 and was one of the first four members of the staff to be selected for the special training scheme. On completion of his special training in 1926, he was appointed to the Road Transport Department, and assisted in the development of the new road services then being inaugurated, particularly railhead distribution schemes, country lorry and special haulage contract services. In 1932 Mr. Pragnell was appointed Road Transport Controller in the London area, and in 1934 he became Principal Assistant in the Chief Goods Manager's Development Department, which position he relinquishes on his resignation. Mr. Pragnell has gained many examination successes at the London University School of Economics and in the G.W.R. classes. He has for some time been a lecturer on Road Transport Operation at the Kennington Commercial Institute, and has also controlled the Great Western Railway course of lectures on Railway Salesmanship. He has been a keen member of the G.W.R. London Literary and Debating Society, and a year or two ago gave a paper on "G.W.R. Cartage Activities." At one time he was a member of the G.W.R. Asssociation Football XI.

Elliott [& Fry

Mr. A. J. Pragnell,
Appointed Deputy General Manager, H.E.H. the Nizam's State Railway (India)

Oxy-Acetylene Welding Conference

Railway engineers discuss latest developments

On Wednesday, October 21, a Railway Engineers' Oxy-Acetylene Welding and Cutting Conference was held under the auspices of the British Oxygen Co. Ltd. at Cricklewood. Reports on locomotive and permanent way welding practice, based on questionnaires submitted by the company, had been received from various countries, together with lantern slides illustrative of the different classes of work. These reports, and also points of railway interest raised by papers presented to the International Welding Conference in London last June, were discussed by the delegates of British and overseas railways. As well as providing opportunities for discussion, the meeting included practical demonstrations of oxy-acetylene welding practice. Permanent way delegates in the morning witnessed the resurfacing of worn crossings, rail bonding, oxygen cutting of rails and the oxy-acetylene scouring and charring of wood poles and sleepers. In the afternoon the locomotive delegates, whose discussions had been held in the morning, watched demonstrations of copper and stainless steel welding, the building up of worn parts with bronze and wear-resisting alloy steel, and oxygen machine cutting.

The first subject for discussion by the locomotive section was copper firebox welding, and it was prefaced by a display of lantern slides showing work of this kind which has been carried out in South Australia and New South Wales. Reports were also submitted by France, Portugal, and Hungary. Mr. C. G. Bainbridge of the British Oxygen Co. Ltd., who was in the chair, explained the principal features of the examples of work shown.

Dr. M. Cook (Imperial Chemical Industries Limited) opened the discussion. He stressed the fact that the subject under discussion was a comparatively new departure, with immense possibilities of effecting economies in the expensive matter of firebox repairs. Experiments by Imperial Chemical Industries confirmed that a better and stronger weld was obtainable with the double-vee. Where circumstances permit, welding from two sides was recommended. Filler welding with copper alloyed with silver and phosphorus gave much more latitude than straight copper. The use of a flux was advised. It was easier to obtain a sound, strong, copper weld with oxidised copper than with strong pitch copper.

Mr. A. H. C. Page (L.M.S.R.) said that it was his practice to use copper-silver wire with no flux, because flux masked the operation too much. The arduous conditions under which welders work inside the firebox had been mentioned, and Mr. Page remarked that when a large job was being done on the firebox it was the L.M.S.R. practice to put a compressed air pipe through the steam dome.

Mr. E. S. Cox (L.M.S.R.) said that if flanges were burned beyond the rivet holes, the flange was cut out into a wedge shape and a new piece of copper was riveted in, welding being used only to close the seams. Welding bridges in tubeplates had been carried out experimentally but it had been found that the original welds cracked when the tubes were expanded in.

Mr. B. R. Byrne (Southern Railway) enquired regarding risks of work-hardening, and the effect of welding upon the grain of the copper. He was answered by Dr. Cook, who said that a certain amount of grain growth was inevitable, but even if the grain size was enlarged it did not mean that the qualities of the copper were much impaired. Even ordinary service in the firebox was sufficient for recrystallisation. Tests had shown that when breaks had occurred they had been in the weld and not in the parent metal.

Other questions of practice raised in the course of the discussion included the use of backing strips. Mr. Page remarked that the practice at Derby was to use a ⅛-in. copper backing strip, 4 in. wide, running the whole length of the weld. No trouble was experienced with wastage of plates on the water side. The life of welds in copper fireboxes also came under discussion, and Mr. R. C. Bond (L.M.S.R.) was surprised at the figure of 30,000 miles quoted in a report from Mr. Harrison of the South Australian Government Railways. It was, however, explained by Mr. S. W. Proctor (Western Australian Government Railways) that this is considered a reasonable figure in Australia on account of the quality of coal and the poor water conditions.

The subject of training welders for copper firebox work was next discussed, and it was recalled that Mr. Harrison's report had stated a preference for men without previous experience of steel welding. They were given months of

Group at the Railway Engineers' Oxy-Acetylene Welding and Cutting Conference, which was held on Wednesday at Cricklewood under the auspices of the British Oxygen Company

specialised training, and their work subjected to periodical tests. These views were supported by Dr. Cook.

Mr. Bainbridge then summed up the discussion, and read out a cablegram of good wishes for the success of the conference which had been received from the Association of American Railroads.

The next stage of the discussion dealt with the welding of cylinders, reports and lantern slides dealing with which had been received from America, Africa, Portugal, and Hungary. In the United States, cast iron rods were being replaced with bronze, which was found to require a lower temperature and reduced preheating, and to take less time. Piston heads were being prepared for the deposition of bronze before going into service.

Answering Mr. Byrne regarding the preparation of piston heads for welding in America just mentioned, the Chairman said that the pistons were turned small in diameter ready for the deposition of bronze, which was again turned to the piston diameter. Satisfactory manganese bronze rod was available in this country, very similar to the rod being used in America. Good results could also be obtained with nickel bronze.

The morning session of the conference then closed, and all delegates were conveyed in motorcoaches provided by the British Oxygen Company to the Brent Bridge Hotel for lunch, as guests of the company.

Permanent Way Section

In the afternoon, while the locomotive engineers witnessed welding demonstrations, the permanent way section met in the conference room for discussion, presided over by Mr. R. E. Doré (British Oxygen Co. Ltd.). The first item on the agenda was the resurfacing of worn crossings, and in the discussion of experiences in work of this kind Mr. T. H. Seaton (L.N.E.R.) said that he had found a perfectly good finished surface to result without grinding. The average cost (not including overheads) since April, 1934, had been £2 18s. a crossing. The oxy-acetylene process was now standard for permanent way work in the Stratford District, and he was using a B.O.C. wear-resisting rod. The figure of £2 18s. was confirmed as the average for 200 crossings in the Southern Area of the L.N.E.R. by Mr. E. Bilham. The lowest figure had been £2 4s.

Mr. N. W. Swinnerton (L.M.S.R.) said that 18 crossings had been experimentally welded. These were satisfactory, but in some cases the deposited metal was very hard. Mr. Doré explained this to be due to absorption of carbon from an excessive acetylene flame, which should not be more than 2¼ in.

The question of grinding was again raised by Mr. K. Brinsmead (L.P.T.B.). Mr. Bilham said that both this and heat treatment were unnecessary, but Mr. N. W. Swinnerton said he would prefer grinding to obtain the right shape for the nose.

Mr. W. E. Benbow (*Welding Industry*) asked what was the life of welded crossings. Mr. L. G. B. Rock (Southern Railway) answered that analysis of a large number of welded crossings had shown each welding to add 67 per cent. to the original life.

Answering Mr. Brinsmead regarding how far a crossing could go before it became too bad to weld, Mr. Swinnerton said that on the L.M.S.R. ½ in. was taken as the limit. Mr. Doré said the British Oxygen Company had successfully welded 1 in. wear. Work hardening by the passage of traffic improved the welds. Building up of switches was practised in America, but not here.

The next item was rail bonding, much of which, said Mr. Doré, was done on the L.M.S.R. This subject, it was recalled by Mr. Rock, had been well dealt with in the paper by Mr. Bainbridge and Mr. Doré to the International Welding Congress in London last June. He explained the method of welding bonds for conductor and running rails on the Southern Railway, where 4,000 had been welded on running lines. The cost had averaged 3s. 5d. a bond. Mr. Swinnerton gave the average cost of running rail bonds on the L.M.S.R. as somewhat lower, mainly owing to cheaper labour costs. Bond welding had made possible a better design of conductor rail.

After a discussion on welded joints, in the course of which reference was made to a description by Mr. H. J. J. Nicolls (Bombay, Baroda, & Central India Railway) of tests of such joints on the Nerbudda bridge, delegates briefly discussed battered rail ends, wood charring in Australia, and rail cutting. With a rail and rivet cutting nozzle, a rail could be cut in 1½ min. at a cost of 2d., and no ill-effects were experienced from the heat.

Films of Welding Practice

All delegates assembled in the conference room after tea, and, after a short concluding discussion three cinema films produced by the British Oxygen Company were shown. The first dealt with bonding procedure, and included scenes taken as recently as last week showing the welding of bonds without interference with traffic on the Wirral section of the L.M.S.R., now being electrified. The second film illustrated the resurfacing of worn crossings, and the third—in colour—the rebuilding of excavator parts worn by strenuous quarrying service. All processes were very clearly demonstrated and explained, and the colour film marks an important and attractive development in cinema publicity for commercial purposes.

Delegates were then entertained to dinner at the Hendon Hall Hotel, at the conclusion of which Mr. P. B. Liversidge (British Oxygen Company), proposing the toast of "the guests," said he had been particularly impressed during the conference by the fact that no detail was too small for consideration if it had to do with railway safety and efficiency.

Mr. T. H. Seaton (L.N.E.R.) replying for the guests, expressed his thanks for the excellent arrangements at the conference, and referred to his deep appreciation of the assistance in welding problems which the British Oxygen Company had also shown itself so ready to afford. Mr. C. O. D. Anderson (L.N.E.R.), supported.

Mr. K. Brinsmead (L.P.T.B.) proposed "the British Oxygen Company," and Mr. Liversidge replied. Mr. C. G. Bainbridge and Mr. R. E. Doré also spoke on behalf of the company.

Some eighty delegates attended the conference, representing the engineering departments of all main-line British Railways, London Transport, and various overseas systems. Among them was Mr. W. A. Stanier, Chief Mechanical Engineer of the L.M.S.R.

BRITISH TIMKEN DINNER.—The annual dinner given by British Timken Limited was held at the May Fair Hotel on Tuesday evening last, October 20. Among those present were many foreign engineers, and the principal guest was Sir Cyril Hurcomb, Permanent Secretary, Ministry of Transport. After dinner the company was entertained by an excellent cabaret.

L.N.E.R. ROAD MOTOR SERVICES.—In view of the general increase in the goods traffic handled at many of the stations in the North Eastern Area, the L.N.E.R. announces that arrangements are being made to improve cartage facilities by providing additional motor vehicles for collection and delivery services. Authority has been given for the purchase of 8 motor lorries, 25 mechanical horses, and 70 trailers, varying from 1½ tons to 6 tons' capacity. The purchase of 2 additional motor vans for the collection and delivery of parcels traffic conveyed by passenger train has also been authorised.

PAULSGROVE HALT, PORTSMOUTH.—The accommodation provided at Paulsgrove halt, between Portchester and Cosham, for use in connection with Portsmouth Park races, has been in considerable demand during the flat racing season, and during the current year over 4,300 passengers had alighted at the halt up to the end of September. A special train conveys passengers from Waterloo on the occasion of each meeting, and facilities are provided for the issue of tickets to passengers arriving by road and returning by rail. The first meeting took place in 1928, but the halt accommodation was not provided until June, 1933, after negotiations had taken place between the railway company and the racecourse directors concerned.

Exhibition of Powers-Samas Accounting Machines

At the invitation of the directors of Powers-Samas Accounting Machines Limited, we were able to be present at the opening by Sir Josiah Stamp, G.C.B., G.B.E., of an exhibition of new models and developments in British accounting machines at Powers-Samas House, Holborn Bars, last Tuesday.

The guests were received by Sir Edgar Horne and Sir Joseph Burn, K.B.E., and then had an opportunity for inspecting the wide range of machines of all kinds comprising the exhibition, prior to the opening ceremony. Among those who accepted the invitation were:—

Viscount Knollys, Lord Austin, Lord Plender, Lord Portal, Sir Ernest Benn, Sir Ralph Cope, and Sir Nigel Davidson.

Sir Joseph Burn said that no introduction of so well-known a personage as Sir Josiah Stamp was necessary, and he would only offer a few remarks. He well remembered as a junior clerk the inefficiency of the old accounting routine and considered that in order to retain British supremacy in trade it was necessary to have constant control and instantly up-to-date knowledge of the financial position of every firm such as mechanical accounting secured. He concluded with a few notes on the Powers-Samas machines, and asked Sir Josiah to open the exhibition.

Sir Josiah Stamp in an amusing speech recalled that 100 years ago Charles Barrage was more than toying with perforated cards. Machines had done much to reform accounting, but their possibilities still had to be fully explored. The Powers-Samas was a system that could be used in the control of every branch of business, and the effects of mechanical accounting might, he considered, be profound in business management. Sir Josiah then called attention to the fact that Powers-Samas machines were entirely British, 1,700 workpeople being employed in their production, in addition to a distributing staff of 300. At Pickfords new Willow Walk depot, Powers-Samas machines were an integral part of the organisation. He concluded by saying that he looked forward to the day when the punched card would be the basis of our life in every direction, and declared the exhibition open.

Sir Edgar Horne on behalf of all present thanked Sir Josiah Stamp for his humorous and acute speech.

After the formal opening, buffet refreshments were served, and the guests then had a fuller opportunity of inspecting the exhibits.

The main feature of the exhibition, which will be open until the end of the month, is the "Powers One" equipment, which for the first time affords a complete mechanised system for the small office. This equipment is small, occupying little space, and is low priced; the cards are about the size of a tram ticket, yet are capable of recording elaborate returns and statistics which are always available. The punching may be done with little table manual machines or with a small mechanical punch. The sorting is done at the rate of 400 a minute, and a complete statement of account with subtotals and grand total can be produced from the cards within about a minute. In this way invoices, monthly statements, accounts paid or outstanding, branch turn-over, total sales, stock sheets and many other forms can be produced very rapidly and with every check to ensure accuracy.

Illuminating Engineers' Presidential Address

On October 13, at the opening meeting of the Illuminating Engineering Society, Mr. Arthur Cunnington, B.Sc., M.I.E.E., President of the Society and Assistant to the Chief Engineer, Southern Railway, for lighting, heating, and water, delivered an address in which he undertook to speak as a representative of the consumers of lighting. Conceding, however, to general expectation, he spoke first upon some special railway applications of light—to the illumination of station nameplates, direction signs, train indicators and timetables—but he pointed out that lighted notices now had to compete with the loud-speaker as a means of directing passengers. The railways had recognised the value of advice from expert lighting engineers for many years, the L.N.E.R. having had a lighting engineer as far back as 1906, thus setting an example to be followed shortly after by the Southern Railway.

Railways consumed every kind of illuminant, and Mr. Cunnington stressed the desirability of standardising supply voltages and gas calorific values. He also advocated uniformity in the charges made for the illuminant. Differences in the nature and cost of the supply over the area served by a railway made the work of a central lighting department very complicated and difficult. Mr. Cunnington appreciated the high efficiency of the modern lighting fittings, but considered more attention should be paid to the lasting quality or easy maintenance of such efficiency. He considered also that more attention should be given to the buildings which have to be illuminated. Floodlight effects during the coming Coronation celebrations would be enhanced if owners of big buildings would have these steam cleaned in advance. Interiors such as the Queens Hall could never be illuminated satisfactorily because of the drab colouring and absence of light diffusion. With illumination suited to its size, such an interior appeared gloomy and depressing—with extra powerful lights there was glare.

Most large consumers, including municipalities responsible for street lighting, were still dependent for advice upon suppliers of illumination equipment and illuminants, and Mr. Cunnington thought that it would benefit such consumers to employ their own lighting engineers or consultants.

L.N.E.R. Accountant's Department Recreative Society's Annual Dinner

At the kind invitation of Mr. G. Sutherland, we were present at a most enjoyable and informal evening, when the 55th annual dinner of the L.N.E.R. Accountant's Department Recreative Society was held at the Abercorn Rooms, Liverpool Street, on Friday, October 16, Mr. G. Sutherland, Chief Accountant, presiding. There was an attendance of 120, and among those present were:—

Messrs. C. H. Newton, J. McLaren, J. Ryan, H. W. H. Richards, H. W. J. Powell, C. A. Everard Greene, F. V. H. Seale, A. J. Trott, F. S. Bond, E. Taylor, G. Morton, A. E. Moore, R. Brown, W. Philip, G. N. Rhodes, A. Feirn, F. J. Orchin, L. C. Glenister, and J. Inglis.

After an excellent dinner all joined heartily in the community singing. Mr. Sutherland then proposed the toast of "The Guests." Mr. C. H. Newton, Divisional General Manager, Southern Area and formerly Chief Accountant, replied to this toast with a very witty speech, in the course of which he said how pleased he was to renew acquaintance with the staff of the Accountant's Department through the medium of this function, and returned thanks for the friendly reception he had received.

Mr. J. McLaren, in proposing the toast of "The President," said he took advantage of this opportunity to congratulate Mr. Sutherland on his appointment to the position of Chief Accountant, an appointment, which to his mind, was all the more welcome as they were brother Scots. Mr. Sutherland, who was received with musical honours, made a short reply.

A musical and variety programme, arranged under the direction of Mr. Bernard Barker, followed the dinner, and the various turns were very much appreciated by all.

Railway Staff and Labour Matters

Road Transport Wages

The committee appointed by the Ministers of Labour and Transport to examine wages and conditions of employees in the road transport industry (goods) met in Edinburgh on Monday last, October 19, and considered evidence submitted by the Scottish Conciliation Board. This body, which is entirely distinct from the National Joint Conciliation Board for England and Wales, is composed of representatives of employers on the one side and, on the workers' side, representatives of the Scottish Horse and Motormen's Association and the Transport and General Workers' Union. Decisions of this board became operative as from July 1, 1935, and both sides of the board agreed "that the acceptance and adoption of the scales of wages and conditions of employment laid down shall be deemed to satisfy the requirements of the Road and Rail Traffic Act, 1933, in so far as that Act refers to "fair wages and conditions."

Mr. T. Worsley, Secretary of the board, expressed the view, which he said was almost unanimously held in the industry, that Scotland should have an independent conciliation board. It was urged that decisions of the board should be prescribed to be the only means of satisfying the provisions in the Road and Rail Traffic Act, 1933, relating to fair wages and conditions. Any breach of these terms, it was contended, should be the subject of summary procedure. On Tuesday, October 20, a further sitting of the Committee was held in Edinburgh and, on behalf of the trade unions, it was claimed that all "C" licence holders should be brought under the scale of wages and conditions of employment laid down by the Scottish Conciliation Board.

Trade Union Membership

The current (October) issue of the *Ministry of Labour Gazette* contains a series of statistical tables, together with an explanatory article, dealing with the membership of trade unions. The statistics are compiled by the Ministry of Labour from returns supplied by the Chief Registrar of Friendly Societies in respect of trade unions registered under the Acts of Parliament and from returns supplied direct to the ministry. The total number of unions known to have been in existence at the end of 1935 was no fewer than 1,042, and the total membership of all unions included in the statistics was approximately 4,842,000, showing an increase of 272,000 over the 1934 figures.

The figures in the railway service group are of interest. These show that, at the end of 1935, there were 410,995 males and 5,401 females, a total of 416,396 members. Figures are shown comparing the 1935 membership total with those for previous years. In 1913 there were approximately 327,000 in the railway service group, 618,000 in 1920, 382,000 in 1933, and 399,000 in 1934. These figures include the membership of Irish Free State and overseas branches, numbering in 1935 some 9,500 railway servants.

The railway service group covers, in the main, the trade unions responsible for organising conciliation and salaried grades. Railway workshop staff are not included in the railway service group but in the metals, machines, conveyances, &c., group, which covers a wide range of industries. In considering the foregoing figures it may be noted that the total number of railway employees—as recorded in the returns published by the Ministry of Transport—was 580,766 in respect of March, 1935, and 585,611 in respect of March, 1936, but it is important to bear in mind that these totals relate only to Great Britain. No exact estimate of the number of railway employees who are trade union members can thus be made from the statistics quoted, but the figures do, at any rate, give some general indications as to the position.

European Timetable Conference

The annual European Timetable Conference was held this year at Montreux-Territet, Switzerland, from October 12 to 17, under the presidency of Herr Etter, General Director (Working and Construction) of the Swiss Federal Railways. At a plenary session the invitation of the Swedish State Railways that next year's conference should be held early in October at Stockholm, was accepted. Since the war, annual conferences had been held at Berne, Lucerne, Nice, Naples, The Hague, Baden-Baden, Prague, Vienna, Warsaw, Copenhagen, London, Brussels, Bucharest, Dubrovnik, and Helsingfors. The Swiss Federal Railways entertained the members of the conference and their ladies to a banquet at the Palace Hotel, Montreux, and the Swiss Federal and Montreux-Oberland Bernois and other Swiss railways arranged a number of attractive excursions for the delegates.

The work of the conference was described in detail in an article which appeared in THE RAILWAY GAZETTE of November 15, 1929. Briefly, the representatives of all European railway administrations to or through whose systems international trains are run, meet once a year for a week to arrange additions to and alterations in the timings of these trains, through coaches, or connecting services. Each country is located a table at the conference, and deals directly with the representatives of the adjoining countries. Numerous discussions and conferences take place during the week and when these have been settled the decisions are signed by the representatives concerned and handed to the secretariat whose permanent headquarters are at Berne.

Obviously, on account of their Continental services, the two British railways most directly concerned are the Southern and London & North Eastern. The countries represented at the Montreux Conference were as follow, the number of delegates being shown in a bracket after each country: Austria (8); Belgium (22); Bulgaria (2); Danzig Free State (1); Denmark (3); Germany (54); Great Britain (10); Estonia (2); Finland (4); France (20); Greece (3); Hungary (12); Italy (16); Jugoslavia (7); Latvia (3); Lithuania (2); Luxembourg (2); Netherlands (7); Norway (2); Poland (9); Portugal (1); Roumania (3); Spain (0); Sweden (6); Switzerland (19); Czechoslovakia (7); Turkey (1); U.S.S.R. (1).

European-Asiatic Railway Conference

The European-Asiatic Railway Conference on Freight Traffic, as briefly recorded on page 594 of our issue for October 9, was concluded in Moscow on October 3, when protocols were signed in the Russian, English, and German languages. In addition to representatives of the Soviet railways and Soviet marine transport, the conference was attended by representatives of the Japanese State Railways, two Japanese shipping companies, the Manchukuo railways, the German, Latvian, and Lithuanian State Railways, also a delegation from the Polish railways. The delegation of the Soviet railways, which had been elected to manage the business of the European-Asiatic railway freight traffic, reported on freight traffic and revenue from the transportation of goods. It was decided to introduce a new tariff, also to include the Polish railways in the European-Asiatic freight traffic. On the suggestion of the Soviet marine transport delegates the ports of Leningrad and London have been included in the freight traffic. The conference decided to ask the parties to the European-Asiatic railway freight traffic to follow the example of the U.S.S.R. and Japan and institute a system for the express dispatch of international service telegrams. The Soviet railways were re-elected managers of European-Asiatic freight traffic for another five years.

NOTES AND NEWS

L.M.S.R. Sells 277,640 Stamps.—Considerable success has attended the L.M.S.R. save-to-travel scheme, no fewer than 277,640 stamps having been sold during the eight months ending August, the latest available figures.

U.S.S.R. Signalman Sentenced to Death.—A Press message from Rostov-on-Don says that a signalman has been sentenced to death for "intentional violations" of regulations which resulted in a train smash involving the death of a number of passengers.

International Railway Congress.—The Thirteenth Session of the International Railway Congress is to be held in Paris from May 31 to June 12, 1937. The list of questions to be discussed, and the names of the reporters, were set forth in THE RAILWAY GAZETTE of February 21 last, page 354.

Anatolian Railway.—According to a press message from Ankara, a German financial delegation is expected there shortly to discuss with the Turkish Ministry of Finance the question of payment of the coupons of the former Anatolian Railway. Germany was financially interested in this railway in pre-war days, and payment on the coupons has been suspended for some time.

Seat Reservation Office at Liverpool Street.—It has been decided by the L.N.E.R. to provide a special seat reservation office on No. 9 platform at Liverpool Street station, whereat passengers will be able to reserve specified seats on the principal trains to the Eastern Counties. When the office is constructed and equipped, the system adopted will be on the card index principle.

Southern Railway Electrification to Reading.—The Southern Railway has decided to continue the electrification of its outer suburban system as far as Reading, and at the same time complete various smaller sections in the Aldershot and Guildford areas. The total route mileage involved is 43 miles, and the track mileage 88. The total cost will be nearly £1,000,000, and it is hoped that the work will be completed by 1939. The lines to be electrified are: Virginia Water to Reading, via Ascot; Ascot to Ash Vale junction; Frimley junction to Pirbright junction; and Aldershot North junction to Guildford.

Half-Year's Traffics of Czechoslovakia.—Traffic on the State railways in the first half of the current year has shown an all-round improvement on that for the first half of 1935. The number of passengers carried was 104,440,000, or 6,360,000 more than in the first half of last year. Some 27,103 tons of luggage and express parcels were conveyed, an increase of 553 tons, and the freight carried amounted to 19,450,000 tons, or 1,510,000 tons more than in 1935. The figures correspond in general to the further slight improvement registered in economic conditions throughout Czechoslovakia in the first half of the present year.

M. & G.N. Locomotives.—The following 85 engines have been taken over by the L.N.E.R. from the M. & G.N., and as they pass through the shops the numbers will be prefixed with a cypher: 1-7, 9, 11-18, 20, 23, 25-28, 36-39, and 41-99.

L.M.S.R. Caravan Bookings for 1937.—The whole of the L.M.S.R. fleet of holiday caravans, numbering 100 and situated at various seaside and inland sites in England and Wales, has already been booked up for August Bank Holiday week 1937. A steady flow of applications for other dates indicates that next year is likely to be a boom year for railway caravan holidays.

Aerial Railway to Monte Bignone.—The wire-rope railway suspended over metal pylons from San Remo to Monte Bignone, the highest peak in the neighbourhood (4,000 ft.), will be opened on October 28. Monte Bignone has for San Remo the same attraction as Pilatus and the Rigi have for Lucerne. Splendid views can be enjoyed from the summit over the whole of the French and Italian Riviera and the island of Corsica, as well as the snow-covered peaks of the Maritime Alps, which rise to 10,000 ft.

Exide Luncheon.—At the Motor Show luncheon which the Exide organisation gives annually at Hammersmith on the opening day of the show, Mr. D. P. Dunne, the Chairman, referred to the increasing legislation which was being directed against the motoring community and thought road accidents could be reduced largely by building special one-way motoring roads. The Hon. Denis G. Berry, responding, referred to the steady progress of Exide batteries, which "keep going when all the others have stopped." There was a large company present.

Steam on the Burlington Zephyr Service.—The Chicago, Burlington & Quincy has taken off one of its Chicago-Minneapolis—St. Paul diesel Zephyr trains and replaced it with a steam train of four or five coaches. This train will run till the two new Zephyrs now building for the Chicago-Twin Cities service are ready. The Zephyr that was taken off has been renamed the Sam Houston and is now in service in Texas over the Burlington-Rock Island line between Dallas and Houston, Texas. The schedule calls for the 247 miles to be made in 250 minutes.

Jersey Railway Fire.—A fire which broke out at the St. Aubins terminus of the Jersey Railways & Tramways Limited, early on October 18, was fanned by a strong wind and swept through the station, burning ten railway carriages, and spreading to five shops. In its efforts to save the Terminus Hotel, the fire brigade succeeded in restricting the flames to the rear of the building. This company's undertaking, comprising 8 miles of 3-ft. 6-in. gauge track, is the only surviving railway in the Channel Islands. Its rolling stock consists of 4 locomotives, 23 carriages, 20 wagons, and 4 Sentinel-Cammell steam railcars.

Glasgow Railway Engineering Co. Ltd.—From Monday, October 19, the address of this company is 139, Rigby Street, Parkhead, Glasgow, E.1; Telephone 1, Bridgeton 3350.

New Depot at Neasden, L.P.T.B.—A contract has been let for the construction of new buildings at Neasden depot, Metropolitan Line, L.P.T.B., to replace premises of which the demolition is now nearly complete. The buildings at the new depot will have a total floor area of 260,246 sq. ft., and including sidings the whole depot will cover 44 acres. With accommodation for 650 passenger vehicles, it will be the largest depot operated by London Transport.

L.M.S.R. Land Sales.—A considerable amount of business was effected at the London Auction Mart last week, and, according to *The Financial Times*, the largest total of the week was realised by Henry F. Cobb from sales of L.M.S.R. lands and properties. In the total of £50,275, No. 285, High Holborn, W.C. (shop property let at £680 per annum) sold for £11,350; a batch of properties in Kensal Green (producing £1,293 per annum) changed hands at £11,865 in lots; and the vacant freehold shop property No. 106, Knightsbridge realised £6,550.

Glasgow Railway Lecture and Debating Society.—The opening meeting of the 1936-37 session of the Glasgow Railway Lecture and Debating Society was held in the Stevenson Hall, Scottish National Academy of Music. A paper was read by Mr. R. Bell, C.B.E., Assistant General Manager of the L.N.E.R., on "The Railway Engine." Mr. A. E. Sewell, Goods Manager, Southern Scottish Area, L.N.E.R., presided, and amongst those present were Mr. G. Mills, Divisional General Manager, Scottish Area, L.N.E.R.; Mr. R. Gardiner, Superintendent; and Mr. J. M Kenzie, District Superintendent, Southern Scottish Area, L.N.E.R.; and Mr. R. W. Gairns, District Engineer, L.M.S.R.

Algerian Garratts in Express Service.—We are informed that eight of the twelve 4-6-2 + 2-6-4 type express passenger Beyer-Garratt locomotives which were described and illustrated in THE RAILWAY GAZETTE for March 27 of this year, have now been placed in service and have in every way come up to expectations. Since September 1 the whole of the express service between Algiers and Oran, a distance of 262 miles, and that on the Constantine line between Algiers and Bordj-bou-Arréridj, a distance of 148 miles, has been worked by these locomotives. A load of 466 tons has been run between Algiers and Oran, 262 miles, without forcing in 6 hr. 20 min., compared with the old

single headed load of 256 tons, for which the timing was 9 hr. 24 min. On these runs, the superheat when steaming keeps in the neighbourhood of 750° F. with peaks up to 800° F. The steam pressure of 20 kg. per sq. cm. (284 lb. per sq. in.) is reported to be maintained with ease. The engines are also stated to be very easy running, economical, and pleasant to drive. The ninth and tenth engines are being shipped at the end of October from Dunkerque, while arrangements have been made for the eleventh engine to be lent to the Northern Railway of France for a few weeks for trials on heavy fast and stopping passenger trains. The twelfth engine will be fitted with oil-burning apparatus, and arrangements have been made for trials of this engine, also, to be run on the Nord.

Redcar East Halt.—The L.N.E.R. has announced that to meet the increase in the number of passengers travelling to and from the halt at Judson's West Crossing between Redcar and Marske on the Darlington & Saltburn branch, which was brought into use in May, 1929, arrangements are being made to provide a new and enlarged booking and parcels office and an additional waiting room with lavatory accommodation on the up platform. Hitherto, certain passenger trains running between Darlington and Saltburn were not booked to stop at the halt, but arrangements have been made for stops to be made in future by all passenger trains.

Road Accidents.—The Ministry of Transport return for the week ended October 17 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year :—

	Killed, including deaths resulting from previous accidents		Injured	
England ..	101	(118)	4,074	(3,758)
Wales	8	(3)	131	(161)
Scotland ..	12	(20)	409	(329)
	121	(141)	4 614	(4.248)

The total fatalities for the previous week were 128, compared with 127 for the corresponding period of last year.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 42nd Week			Totals to Date		
	1936	1935	Inc. or Dec.	1936	1935	Inc. or Dec.
L.M.S.R. (6,916½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	464,000	434,000	+ 30,000	21,364,000	20,876,000	+ 488,000
Merchandise, &c. ...	528,000	506,000	+ 22,000	19,945,000	18,831,000	+1,114,000
Coal and coke ...	251,000	240,000	+ 11,000	9,983,000	9,536,000	+ 447,000
Goods-train traffic ...	779,000	746,000	+ 33,000	29,928,000	28,367,000	+1,561,000
Total receipts	1,243,000	1,180,000	+ 63,000	51,292,000	49,243,000	+2,049,000
L.N.E.R. (6,332 mls.)						
Passenger-train traffic...	297,000	286,000	+ 11,000	13,868,000	13,592,000	+ 276,000
Merchandise, &c. ...	360,000	355,000	+ 5,000	13,504,000	13,013,000	+ 491,000
Coal and coke ...	250,000	237,000	+ 13,000	9,667,000	9,216,000	+ 451,000
Goods-train traffic ...	610,000	592,000	+ 18,000	23,171,000	22,229,000	+ 942,000
Total receipts	907,000	878,000	+ 29,000	37,039,000	35,821,000	+1,218,000
G.W.R. (3,746½ mls.)						
Passenger-train traffic...	192,000	177,000	+ 15,000	9,005,000	8,861,000	+ 144,000
Merchandise, &c. ...	207,000	207,000	—	7,964,000	7,638,000	+ 326,000
Coal and coke ...	107,000	98,000	+ 9,000	4,182,000	4,101,000	+ 81,000
Goods-train traffic ...	314,000	305,000	+ 9,000	12,146,000	11,739,000	+ 407,000
Total receipts	506,000	482,000	+ 24,000	21,151,000	20,600,000	+ 551,000
S.R. (2,153 mls.)						
Passenger-train traffic...	280,000	265,000	+ 15,000	13,178,000	12,954,000	+ 224,000
Merchandise, &c. ...	64,500	71,000	— 6,500	2,628,000	2,591,500	+ 36,500
Coal and coke ...	32,500	32,000	+ 500	1,284,000	1,231,500	+ 52,500
Goods-train traffic ...	97,000	103,000	— 6,000	3,912,000	3,823,000	+ 89,000
Total receipts	377,000	368,000	+ 9,000	17,090,000	16,777,000	+ 313,000
Liverpool Overhead ... (6½ mls.)	1,192	1,090	+ 102	50,304	49,907	+ 397
Mersey (4½ mls.) ...	4,293	4,171	+ 122	170,009	168,062	+ 1,947
*London Passenger Transport Board ...	566,700	554,600	+ 12,100	8,934,300	8,677,100	+ 257,200
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,792	1,878	— 86	112,203	110,457	+ 1,746
,, ,, goods	571	661	— 90	22,433	21,061	+ 1,372
,, ,, total	2,363	3,539	— 176	134,636	131,518	+ 3,118
†Great Northern pass. (543 mls.)	9,800	8,700	+ 1,100	462,150	442,150	+ 20,000
,, ,, goods	10,500	11,050	— 550	393,250	389,600	+ 3,650
,, ,, total	20,300	19,750	+ 550	855,400	831,750	+ 23,650
†Great Southern pass. (2,067 mls.)	31,251	28,763	+ 2,488	1,529,932	1,483,417	+ 46,515
,, ,, goods	50,778	46,961	+ 3,817	1,704,182	1,592,810	+ 111,372
,, ,, total	82,029	75,724	+ 6,305	3,234,114	3,076,227	+ 157,887

* 16th week. † 41st week.

British and Irish Railways Stocks and Shares

Stocks	Highest 1935	Lowest 1935	Prices Oct. 21, 1936	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	44½	59	−1
5% Con. Prefce ...	124	108	124	—
5% Red.Pref.(1950)	117	106¾	110½	—
4% Deb.	118½	108	117	−1
4½% Deb. ...	122	110	120½	—
4½% Deb. ...	129½	118	127½	—
5% Deb.	140¼	130	138½	—
2½% Deb. ...	82¼	68½	76½	—
5% Rt. Charge ...	137	128	135½	—
5% Cons. Guar. ...	136¾	120½	133½	—
L.M.S.R.				
Ord.	25516	16	29½	−½
4% Prefce. (1923)	58¼	43½	79	—
4% Prefce. ...	87½	73½	90	—
5% Red.Pref.(1955)	107	97¾	108½	—
4% Deb.	110¼	99½	110½	—
5% Red.Deb.(1952)	119116	111516	115½*	−2
4% Guar. ...	105⅝	95½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	15⅞	8¼	12½	−¾
Def. Ord. ...	7916	4¾	6¼	−⅛
4% First Prefce.	74¾	48	78	—
4% Second Prefce.	31¾	16¼	31	−½
5% Red.Pref.(1955)	92¼	71	98	—
4% First Guar. ...	103116	93	103	—
4% Second Guar.	98¾	82½	98½	—
3% Deb.	86	75	84	—
4% Deb.	109¼	98½	108½	—
5% Red.Deb.(1947)	118¼	106½	112½	+1
4½% Sinking Fund Red. Deb.	112½	108	110½	—
SOUTHERN				
Pref. Ord. ...	87½	69¾	97	−1
Def. Ord. ...	25316	16¾	26	−¼
5% Prefce. ...	124	108¼	124½	+½
5% Red.Pref.(1964)	117¾	109½	117½	—
5% Guar. Prefce.	136½	121½	133½	+½
5% Red.Guar.Pref. (1957)	121¼	112½	117½	—
4% Deb.	116¾	107	115	−1
5% Deb.	138	130¼	137½	—
4% Red. Deb. 1962–67	115	106½	112½	—
BELFAST & C.D.				
Ord.	9	4	4½	—
FORTH BRIDGE				
4% Deb.	111¼	104¼	105½	—
4% Guar. ...	109⅞	104	105½	—
G. NORTHERN (IRELAND)				
Ord.	20	7	12¾	−¼
G. SOUTHERN (IRELAND)				
Ord.	57½	14½	54	—
Prefce.	50	25¼	60	−¾
Guar.	88¾	51¼	88½	−1
Deb.	86¼	70	95¼	−½
L.P.T.B.				
4½% "A" ...	130	119¾	126½	—
5% "A" ...	139¾	130	136½	—
4½% "T.F.A." ...	113¾	108	110½	+½
5% "B" ...	131½	122¾	129	—
"C"	109½	91	102	—
MERSEY				
Ord.	23⅛	9¼	38	−1
4% Perp. Deb. ...	100½	93½	100	—
3% Perp. Deb. ...	75½	67	76½	—
3% Perp. Prefce.	62	47¼	67½	—

ex dividend

CONTRACTS AND TENDERS

Peckett & Sons Limited has received an order from the Cleveland Bridge & Engineering Co. Ltd. for two standard 12-in. steam 0-4-0 saddle tank shunting locomotives, 5 ft. 6 in.-gauge, required for the new Howrah bridge works, India.

S.A. des Ateliers des Construction des Familleureux has received an order from the Mysore State Railways for 14 four-wheeled bogie trucks to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Taylor Brothers & Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for 74 locomotive axles and 215 carriage and wagon axles.

The North British Locomotive Co. Ltd. has received an order from the Siamese State Railways for six boilers required for 4-6-0 locomotives, to be supplied to the inspection of Messrs. Sandberg.

George Spencer, Moulton & Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for approximately 6,000 indiarubber concentric springs.

Ruhrstahl A.G. has received an order from the Assam-Bengal Railway Administration for 600 carriage and wagon tyres, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

The South Indian Railway Administration has placed the following orders to the inspection of Messrs. Robert White & Partners :—

John Walsh & Co. (Birmingham) Ltd., Approx. 15-tons of galvanised corrugated sheets for wagon roofs.

Thos. Perrins, 97 Chain anchor cables and 27 cwt. of wrought iron chains for miscellaneous purposes.

T. F. Johnson, Approx. 12-tons of bolts, nuts, screws, &c.

The Associated Equipment Co. Ltd. has received the following orders from railway-associated road transport operators : Trent Motor Traction Co. Ltd., 20 oil-engined Regals ; and Sheffield Corporation Transport Department, one oil-engined Regent.

The General Electric Co. Ltd. announces that Osram lamps are being used for the lighting of many of the new London Transport trolleybuses, which are displacing trams in various parts of the London area. The lamps are of special design and operate on 35 volts.

Ransomes & Rapier Limited has just delivered to the Bombay Port Trust a 3½/5-ton diesel-electric mobile crane fitted with an Ailsa Craig Limited diesel engine and possessing the unusual feature of a separately-excited generator with additional voltage control by pedal-operated rheostat. The crane has a capacity of 2½ tons at 10 ft. 6 in. radius and 1¾ tons at 17 ft. 6 in. radius.

The Birmingham Railway Carriage & Wagon Co. Ltd. has received an order from the Central Argentine Railway for 2,000 high-tensile steel weldless two-link coupling chains and 2,000 shackles.

Smith Patterson Limited has received an order from the L.N.E.R. for 770 tons of permanent way chairs.

J. C. Abbott & Co. Ltd. has received an order from the L.N.E.R. for 1,000 tons of pig iron.

The L.N.E.R. has placed orders for a total of 4,000 pairs of wagon wheels and axles divided as follows : J. Baker & Bessemer Limited, 1,000 pairs ; Taylor Bros. & Co. Ltd., 2,000 pairs ; and Owen & Dyson Limited, 1,000 pairs.

Canusa Limited has received orders from the L.N.E.R. for 742 loads of Canadian fir for use as railway crossing timbers.

The United Steel Co. Ltd. has received an order from the L.N.E.R. for 30 tons of steel fishplates.

Karrier Motors Limited has received an order from the G.W.R. through Rootes Limited for 53 Cob Junior tractors. These tractors incorporate four-cylinder power units developing 47 h.p., and are mounted on 23 in. by 5 in.-pneumatic tyres. Turning radius is as small as 9 ft., and the automatic coupling and brake gear with which each is fitted enables operation with a variety of quickly detachable trailers.

The Vulcan Foundry Co. Ltd. has received an order from the Bhavnagar State Railways, to the inspection of Messrs. Robert White & Partners for locomotive spares, comprising cast-iron cylinders, piston rings, piston valve liners, reversing shaft and tender wheels and axles.

The Monarch Controller Co. Ltd. is to supply Monarch door controllers for the 12-ton low-sided wagons for which contracts have recently been placed by the L.M.S.R. with Charles Roberts & Co. Ltd., the Metropolitan-Cammell Carriage & Wagon Co. Ltd., and Hurst, Nelson & Co. Ltd. Similarly, Monarch door controllers are to be supplied for the 100 40-ton high-sided wagons recently ordered by the Sao Paulo (Brazilian) Railway from the Gloucester Railway Carriage & Wagon Co. Ltd.

The Chinese Government Purchasing Commission, on behalf of the Ministry of Railways, China, and to the inspection of Messrs. Sandberg, has placed the following orders for equipment required for the Canton-Hankow Railway :

North British Locomotive Co. Ltd. and Yorkshire Engine Co. Ltd., Locomotive spares.
Samuel Osborn & Co. Ltd., Laminated springs.
Colvilles Limited, Steel firebox sheets.
Guest Keen Baldwins Limited, 12,000 Steel fishplates.

Leyland Motors Limited has received orders from the Scottish Motor Traction Co. Ltd. for 64 Leyland oil engines. The following orders for Leyland passenger vehicles, fitted with oil engines, have also been received from railway-associated road transport operators : W. Alexander & Sons Ltd., 50 ; and Eastern National Omnibus Co. Ltd., seven Titans ; and Western S.M.T. Co. Ltd., 15 ; Sunderland & District Omnibus Co. Ltd., 12 ; and Eastern National Omnibus Co. Ltd., three Tigers.

Australian Enquiry for Diesel-Electric Shunting Locomotive

The Victorian Government Railways Commissioners are calling for tenders (Contract No. 48698) for the supply and delivery of one 400-b.h.p. diesel-electric shunting locomotive, complete with all auxiliary and protective equipment. Tenders must be received in Australia by December 16.

A copy of the specification and general conditions of tender together with blue prints, may be borrowed from the Department of Overseas Trade (Room 87). Local representation is essential, and the Department of Overseas Trade is prepared to furnish firms desirous of tendering for the supply of material of United Kingdom manufacture, and not represented in Australia with the names of United Kingdom merchant houses with local connections who may be willing to handle tenders on their behalf.

The Chicago, Milwaukee, St. Paul & Pacific Railroad is inquiring for the construction of 31 locomotives costing $4,000,000.

Tenders are invited by the Director-General, India Store Department, Belvedere Road, Lambeth, S.E.1, receivable by October 30, for 200 tons of spring steel and 288 steel locomotive tyres.

Tenders are invited by the Bengal-Nagpur Railway Administration, receivable at 132, Gresham House, Old Broad Street, London, E.C., by October 30, for 2,000 steel carriage and wagon tyres.

Tenders are invited by the Egyptian State Railways Administration, receivable by December 29 for the supply of 38 10-ton petrol tank wagons, and receivable by January 12, 1937, for the supply of perishable goods trucks.

The Argentine State Railways Administration is calling for tenders, to be presented in Buenos Aires by November 13, for the supply of emery wheels, whetstones, emery powder, emery cloth, &c. Firms desirous of offering material of United Kingdom manufacture can obtain further details from the Department of Overseas Trade.

Forthcoming Meetings.

Oct. 28 (*Wed.*)—**Assam Railways & Trading Co. Ltd.,** (Ordinary General), Winchester House, Old Broad Street, E.C., at 12 noon.

Oct. 29 (*Thurs.*)—**Buenos Ayres & Pacific Railway Co. Ltd.,** (Ordinary General), Winchester House, Old Broad Street, E.C., at 11 a.m.

Nov. 4 (*Wed.*)—**Buenos Ayres Western Railway, Limited** (Annual General), River Plate House, Finsbury Circus, E.C.2, at 12.15 p.m.

OFFICIAL NOTICES

Bengal-Nagpur Railway Company Limited

THE Directors are prepared to receive Tenders for :—

2,000 STEEL CARRIAGE AND WAGON TYRES.

Specification and Form of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Tuesday, 20th October, 1936.

A fee of 20s. will be charged for each copy of the Specification, which is *NOT* returnable.

Tenders must be submitted not later than Noon on Friday, 30th October, 1936.

The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
T. R. WYNNE,
Managing Director.

Central Argentine Railway Limited

NOTICE IS HEREBY GIVEN that the transfer books of the Company will be closed from 22nd October, 1936, to 5th November, 1936, both days inclusive.

RONALD LESLIE,
London Manager and Secretary.

3A, Coleman Street,
London, E.C.2.
15th October, 1936.

RAILWAY AND OTHER REPORTS

Bengal - Nagpur Railway.—The directors recommend a final dividend from reserve of ¼ per cent., payable on January 1, together with the guaranteed interest of 1¾ per cent. then due, making a total distribution of 4 per cent. for the year, the same as for the previous year.

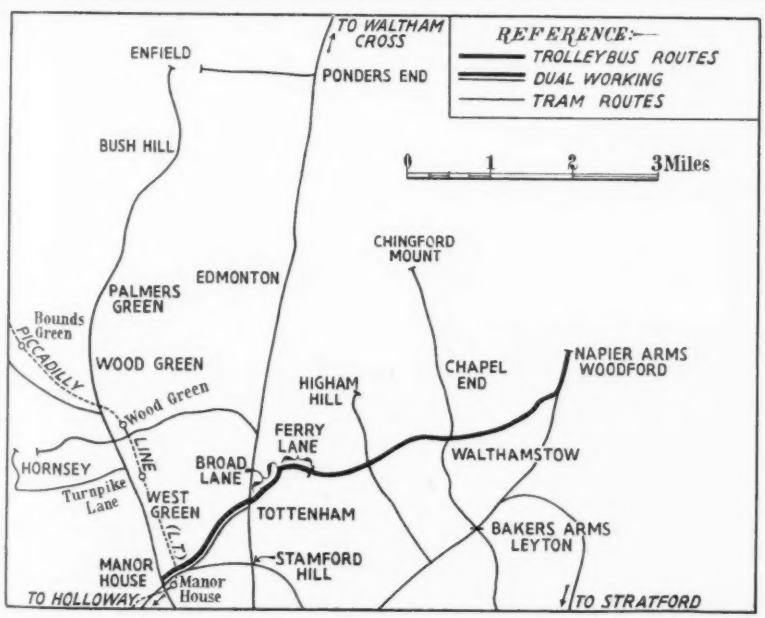
Antofagasta (Chili) & Bolivia Railway.—The directors have decided to pay, on account of arrears, a dividend of 2½ per cent. on the five per cent. cumulative preference stock. Payment will be made on December 15. This distribution will leave arrears from July 1, 1933.

Buenos Ayres & Pacific Railway.—Gross earnings for the year ended June 30, 1936, rose by £289,610 to £6,529,274, but working expenses were £508,450 heavier at £5,179,229, leaving net receipts £219,140 lower at £1,350,045. Differences in exchange resulted in a loss of £985,586, compared with £915,881. From this is deducted £275,527 (against £112,820) transferred from exchange reserve on currency net floating assets. Total net income, including £169,205 from rents and interest, is £809,191, a decrease of £105,945. In the final result the debit of £3,295,551 brought in is increased to £4,184,665.

Callender's Cable & Construction Co. Ltd.—An interim dividend is announced of 5 per cent., the same as a year ago.

Hoffmann Manufacturing Co. Ltd.—An interim dividend of 6 per cent., tax free, on the ordinary shares, was paid on October 15, as announced. This compares with an interim dividend of 4 per cent., tax free, a year ago.

Port of Rangoon.—The report of the Commissioners for the year to March 31, 1936, shows that income fell to Rs. 72,05,954, and expenditure rose from Rs. 67,33,811 to Rs. 69,51,709, leaving a balance of Rs. 2,54,245. There was a decrease from Rs. 41,03,189 to Rs. 39,19,207 in the income from dues on goods caused partly by a fall in exports (principally of rice shipped in the stream) and partly by the introduction from April 1, 1935, of a 10 per cent. rebate on landing, shipping, and other charges on traffic over the wharves. The decrease from Rs. 19,38,794 to Rs. 17,37,669 in dues on vessels reflects the reduction of the port due from 5½ to 4½ annas a ton. On the expenditure side, interest and sinking fund charges were reduced from Rs. 27,80,954 to Rs. 27,09,325 in consequence of repayment of loans. Ordinary expenditure advanced from Rs. 38,80,419 to Rs. 39,91,310, mainly because of the cessation of the emergency cut in the pay of the staff.



The new London Transport trolleybus route—the first in north-east London—which was inaugurated on Sunday last. The new facilities, including direct access to the underground railways, are referred to in a note in our Road Transport Section on page 659

Forthcoming Events

Oct. 23 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 6 p.m. Presidential Address by Sir Nigel Gresley.

Institution of Railway Signal Engineers, at Criterion Restaurant, Piccadilly Circus, London, W.1, 6.30 for 7 p.m. Annual, Dinner and Dance.

Wandsworth Technical Institute, High Street London, S.W.18, 8 p.m. "Organisation in the Transport Industry," by Mr. J. Marchbank.

Oct. 23–24.—L.M.S.R. (London) Dramatic Society, at Cripplegate Inst. Theatre, Golden Lane, E.C.1, 8 p.m. "The Last of Mrs. Cheyney."

Oct. 26 (*Mon.*).—Institute of Welding (Teesside), at Cleveland Scientific Inst., Corporation Road, Middlesbrough, 7.30 p.m. "Electric Arc Welding Machines," by Mr. E. Judge.

Railway Students' Association (Edinburgh), at Goold Hall, St. Andrew Square. 8 p.m. "Guards' Duties," by Mr. W. Lithgow.

Oct. 27 (*Tues.*).—Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. Inaugural Meeting. Reception and Address by Sir Alfred Read.

National "Safety First" Association Regional Industrial Conference, at Bleachers' Assembly Hall, Manchester.

Oct. 28 (*Wed.*).—Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "A Study of the System of Underground Road Crossings of Paris," by Mr. J. Greber.

Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "The Taper Boiler," by Mr. J. Thompson.

Railway Students' Association, at London School of Economics, Houghton Street, W.C.2, 6 p.m. Presidential Address by Mr. William Whitelaw.

Oct. 29 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, at General Meeting Room, Paddington Station, W.2, 5.45 p.m. *Debate:* "That Travel is Inimical to a Contented Mind." *Affirmative:* Bank of England Debating Society. *Negative:* G.W.R. Debating Society.

Railway Share Market

The stock and share markets have shown a moderate decline in business, and as a result Home railway stocks attracted rather less attention. A certain amount of profit-taking developed and prices were affected to some extent, but in no case was there any sharp decline and the disposition is to assume that a stronger tendency will develop shortly. Sentiment was affected to some extent by the decision on the question of a large road haulier's licences, but although it was realised that this was not a development of great importance, it probably prevented prices making any good response to the traffic figures for the past week. The latter show an aggregate gain of £125,000 for the main line railways, which was in excess of general expectations, particularly as the figures now compare with those for the period last year when there were unusually large coal traffics owing to the threat of a coal strike in South Wales.

L.M.S.R. ordinary was fractionally lower on the week at 29½, but a firmer tendency was in evidence later in the 4 per cent. and 1923 preference stocks owing to the belief that dividends on both stocks will be covered by a satisfactory margin. For the past week the railway's traffics show a rise of £63,000, L.N.E.R. stocks were steadier following the traffic return, which in this case shows a gain of £29,000. There was, however, a fair amount of profit-taking in both the deferred and preferred stocks on the part of holders who had purchased recently at rather lower prices. Profit-taking was also in evidence in Southern deferred, which is now 26⅜, while the preferred is fractionally lower at 97¼. The past week's traffic increase of £9,000 was rather below general expectations in the market. Great Western ordinary was easier but the lower price brought in buyers who were encouraged by the traffic increase of £24,000 for the past week. London Transport "C" stock was fairly well maintained.

Among foreign railway stocks those of the Argentine railways were steadier, but B.A. Gt. Southern reacted sharply following publication of the past year's results. B.A. Pacific was better at 11, but B.A. Western was slightly lower at 17¾. Central Argentine stocks were bought and the 6 per cent. preference was favoured, Entre Rios was better. Elsewhere, Antofagasta responded with a rise to 21½ on the payment in respect of preference dividend arrears. Nitrate Rails were lower on balance but later showed a steadier tendency. Canadian Pacific preference was reported to be firmer.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1935-36	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1935	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1935	Prices: Lowest 1935	Prices: Oct. 21, 1936	Prices: % Yield (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	834	18.10.36	14,180	— 3,620	42	571,160	515,080	+ 56,080	Ord. Stk.	23	14 15/16	21 1/2	Nil
	Argentine North Eastern	753	17.10.36	8,823	+ 1,150	16	148,950	133,967	+ 14,983	,,	7	4	7	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	49 1/2	30	50	8
	Bolivar	174	Sept., 1936	5,200	+ 200	39	57,700	55,300	+ 2,406	6 p.c. Deb.	13	5	7 1/2	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	14	11	16 1/2	3
	Buenos Ayres & Pacific	2,806	17.10.36	79,294	+ 1,914	16	1,178,869	1,164,437	+ 14,432	Ord. Stk.	10 1/2	4 7/8	11 1/2	Nil
	Buenos Ayres Central	190	10.10.36	$177,600	+ $71,300	15	$2,048,500	$1,917,400	+ $131,100	Mt. Deb.	21	10	26	Nil
	Buenos Ayres Gt. Southern	5,084	17.10.36	112,235	— 4,510	16	1,729,372	1,904,132	— 174,760	Ord. Stk.	27	13 1/2	23 1/2	Nil
	Buenos Ayres Western	1,930	17.10.36	40,706	+ 10,271	16	622,466	626,649	— 4,183	,,	24	10	18	Nil
	Central Argentine	3,700	17.10.36	138,841	+ 30,530	16	2,181,972	1,890,655	+ 291,317	,,	17 7/8	7	19	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9	3 1/4	10	Nil
	Cent. Uruguay of M. Video	273	10.10.36	10,952	+ 2,345	15	161,375	127,961	+ 33,414	Ord. Stk.	8 1/2	3	5	Nil
	Do. Eastern Extn.	311	10.10.36	1,636	+ 109	15	25,022	20,289	+ 4,733	—	—	—	—	—
	Do. Northern Extn.	185	10.10.36	898	— 196	15	20,560	16,394	+ 4,166	—	—	—	—	—
	Do. Western Extn.	211	10.10.36	1,112	+ 346	15	14,245	11,109	+ 3,136	—	—	—	—	—
	Cordoba Central	1,218	17.10.36	25,650	+ 30	16	536,670	504,720	+ 31,950	Ord. Inc.	4	1	2	Nil
	Costa Rica	188	31.8.36	17,130	+ 458	8	38,568	30,402	+ 8,166	Stk.	35	30	35 1/2	5 5/8
	Dorada	70	Sept., 1936	14,400	+ 2,200	39	126,600	105,500	+ 21,100	1 Mt. Db.	103 5/8	102 1/2	104 1/2	5 3/4
	Entre Rios	810	17.10.36	12,329	+ 2,371	16	198,096	191,350	+ 6,746	Ord. Stk.	15	6 1/2	11 1/2	Nil
	Great Western of Brazil	1,082	17.10.36	10,300	— 300	42	308,400	309,600	— 1,200	Ord. Sh.	1/2	5/16	3/4	Nil
	International of Cl. Amer.	794	Aug., 1936	$317,321	+ $12,980	35	$3,624,632	$3,265,010	+ $359,622	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1/2	3/32	1/2	Nil
	La Guaira & Caracas	22¾	Sept. 1936	4,350	+ 790	39	41,545	34,985	+ 6,560	Stk.	8 1/2	8	5 1/2	Nil
	Leopoldina	1,918	17.10.36	23,832	+ 1,901	42	804,374	740,420	+ 63,954	Ord. Stk.	8 1/2	2 1/2	7 1/2	Nil
	Mexican	483	14.10.36	$276,600	+ $31,400	15	$3,865,900	$3,756,900	+ $109,000	,,	1 1/2	1/4	3/4	Nil
	Midland of Uruguay	319	Sept., 1936	7,673	+ 2,348	13	23,343	16,336	+ 7,007	,,	1 1/2	1 1/2	1/2	Nil
	Nitrate	397	15.10.36	4,185	— 3,518	41	97,785	117,857	— 20,072	Ord. Sh.	64/-	42/-	2 11/16	Nil
	Paraguay Central	274	10.10.36	$2,919,000	+ $1,027,000	15	$39,369,000	$33,125,000	+ $6,244,000	Pr. Li. Stk.	80 1/2	60	78 1/2	7 5/8
	Peruvian Corporation	1,059	Sept., 1936	£5,485	+ £6,210	13	£57,046	£17,772	+ £39,274	Pref.	10 5/8	6 7/16	12	Nil
	Salvador	100	17.10.36	£14,000	+ £3,021	16	£170,730	£189,521	— £18,791	Pr. Li. Db.	65	61	15	Nil
	San Paulo	153½	17.10.36	26,531	— 423	41	1,219,043	1,002,765	+ 216,278	Ord. Stk.	80	35	85 1/2	2 15/16
	Taltal	164	Sept., 1936	2,605	— 1,700	13	8,755	9,250	— 495	Ord. Sh.	11 11/16	1 1/8	1 11/16§	7 15/16
	United of Havana	1,353	17.10.36	14,150	— 682	16	245,469	263,638	— 18,169	Ord. Stk.	3 1/16	1	2 1/2	Nil
	Uruguay Northern	73	Sept., 1936	897	+ 299	13	2,580	1,797	+ 783	Deb. Stk.	4 1/2	2 15/16	4 1/2	Nil
Canada.	Canadian National	23,615	14.10.36	789,283	— 36,518	41	28,507,545	26,640,390	+ 1,867,155	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	78 5/8	52 1/2	72 1/2	5 1/2
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	103 5/8	93	102 1/2	3 7/8
	Canadian Pacific	17,220	14.10.36	640,400	— 39,000	41	21,267,000	19,750,600	+ 1,516,400	Ord. Stk.	14 1/16	8 3/4	13 1/2	Nil
India.†	Assam Bengal	1,329	20.9.36	33,015	+ 259	24	571,461	550,775	+ 20,686	Ord. Stk.	92 1/8	77 1/2	86 1/2	3 7/16
	Barsi Light	202	20.9.36	2,085	— 1,050	24	58,027	68,887	— 10,860	Ord. Sh.	105	77 1/2	69 1/2	7 5/8
	Bengal & North Western	2,112	20.9.36	53,878	+ 2,817	25	1,259,127	1,164,038	+ 95,089	Ord. Stk.	30 11/2	291	313	5 1/8
	Bengal Dooars & Extension	161	20.9.36	4,449	— 192	26	64,407	65,929	— 1,522	,,	127 1/2	122	122 1/2§	5 11/16
	Bengal-Nagpur	3,268	30.9.36	147,300	+ 24,246	26	2,977,176	3,154,886	— 177,710	,,	105	100 5/16	102 1/2	3 7/8
	Bombay, Baroda & Cl. India	3,072	10.10.36	204,750	+ 29,325	28	4,253,400	4,045,125	+ 208,275	,,	115 1/4	110	112 1/2	5 5/16
	Madras & Southern Mahratta	3,229	30.9.36	129,675	— 6,539	26	2,743,052	2,694,532	+ 48,520	,,	128 1/2	113 7/8	112 1/2	8
	Rohilkund & Kumaon	546	20.9.36	9,923	+ 1,087	25	246,942	221,324	+ 26,618	,,	294	262	311 1/2	5 1/8
	South Indian	2,532	30.9.36	114,682	+ 7,231	26	2,028,425	2,033,254	— 4,829	,,	119 3/4	104 1/4	103 1/2	5 5/16
Various.	Beira-Umtali	204	Aug., 1936	73,900	+ 3,933	48	719,218	710,272	+ 8,946	—	—	—	—	—
	Bilbao River & Cantabrian	15	Sept., 1936	1,639	+ 478	40	13,631	13,358	+ 273	—	—	—	—	—
	Egyptian Delta	620	30.9.36	8,021	+ 659	26	110,473	102,500	+ 7,973	Prf. Sh.	2	15/8	1 3/4	5 11/16
	Great Southern of Spain	104	29.8.36	568	— 2,514	35	33,629	62,623	— 28,994	Inc. Deb.	3 1/2	2	3 1/2	Nil
	Kenya & Uganda	1,625	Sept., 1936	165,531	— 2,618	38	1,947,395	1,809,484	+ 137,901	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48	36	45 1/2	7 11/16
	Mashonaland	913	Aug., 1936	112,733	— 4,955	48	1,131,918	1,277,362	— 145,444	1 Mg. Db.	104 1/4	100	102 1/2§	4 7/8
	Midland of W. Australia	277	Aug., 1936	11,651	— 393	9	2,865	23,052	— 1,187	Inc. Deb.	98 3/4	93	95	4 5/16
	Nigerian	1,905	5.9.36	37,501	+ 20,554	23	632,743	527,724	+ 125,019	—	—	—	—	—
	Rhodesia	1,538	Aug., 1936	207,304	+ 4,235	48	2,075,634	2,126,923	— 51,289	4 p.c. Db.	105 1/2	101	106	3 3/4
	South African	13,263	26.9.36	625,182	+ 29,561	25	15,384,593	14,123,895	+ 1,260,698	—	—	—	—	—
	Victoria	4,728	June, 1936	703,693	+ 16,855	52	9,689,925	9,421,092	+ 268,833	—	—	—	—	—
	Zafra & Huelva	112	May, 1936	8,821	— 2,027	22	48,574	55,398	— 6,823	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value.